99-C-98526
18-C-98526
17-C-98758

Working Paper Series

The Development of an Interim Geographic Medicare Economic Index

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THE URBAN INSTITUTE

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December 1987

HCFA Project Officers

Department of Health and Human Services
Health Care Financing Administration
Office of Research and Demonstrations

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Support for this research was provided by Health Care Financing Administration to the Urban Institute through Grant No. 18-C-98326/1-01 to the Brandeis University Health Policy Research Consortium and to the Center for Health Economics Research through Grant No. 17-C-98758/1-03. Any options expressed are those of the authors and not necessarily those of the Health Care Financing Administration, Center for Health Economics Research, The Urban Institute or its sponsors.

Project Cost $ 132,536

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ACKNOWLEDGEMENT

The authors would like to thank Jerry Cromwell for his useful comments, many of which have been incorporated into this report. This report benefitted greatly from guidance provided by numerous individuals with respect to potential data sources. We also appreciate our HCFA project officers, Sherry Terrell, Deborah Williams, and Terrence Kay, without whose support this project might not have gotten off the ground. Finally, we would like to acknowledge Ranjit Dighe for his diligent computer assistance.

EXECUTIVE SUMMARY

Physician payment reforms aimed at reducing the wide geographic disparity in Medicare fees will recognize that some variation is due to justifiable geographical differences in practice costs. Since there is currently no mechanism for measuring these cost differences, it is necessary to develop some type of index of these costs. Congress realized that a highly refined instrument might take several years to develop. It, therefore, mandated that an interim index be produced in approximately 6 months. This interim index is discussed in this report.

Developing an interim Geographic Medicare Economic Index (GMEI) required choices about the technical structure of the index, the definition of geographic areas for which the index would be computed, and the applicability of available data sources. To develop the interim GMEI within six months, it was essential for us to draw on existing theory, policy instruments, and data whenever possible. With this in mind, deciding on the technical structure of the interim GMEI was fairly straightforward. We chose to adopt a Laspeyres input price index that included prices for physicians' own time, employee wages, office rents, malpractice insurance, medical supplies, medical equipment, and miscellaneous other expenses. In a Laspeyres index, the cost of a market basket of goods (in this case, inputs) is compared across areas. The index captures only geographic differences in input prices, so it is not biased by geographic differences in the types of services physicians provide. HCFA has been using this basic structure since 1975 to monitor the national rate of increase in practice costs through the Medicare Economic Index (MEI).

The choice of GMEI areas was less straightforward but, nonetheless, again we were able to draw on a current HCFA payment methodology. The areas for a physician geographic input price index should satisfy two criteria: (1) homogeneity in input prices, so that there is more inter- than intra-area variation in costs; and (2) large enough geographically so that the areas are self-contained markets to minimize border-crossing. Unfortunately, these are conflicting goals. The first criterion suggests very small areas (e.g., counties or zip codes), the latter very large ones (e.g., states or census divisions).

The middle ground to break this conceptual stalemate is the Metropolitan Statistical Area (MSA)--aggregations of adjacent counties with close economic and social ties. The MSA is large enough to eliminate most border-crossing and yet is a single market, so prices tend to vary little. Using the MSA required special treatment for non-MSA areas. Our approach grouped these non-MSA areas into county aggregates on a state-by-state basis. This basic MSA/non-MSA pattern is used for the area wage index (another input price index) employed in the prospective payment system for hospitals (PPS), creating a policy precedent for its use here.

Two types of data were needed for the computation of GMEI: (1) area-specific input price data (or price proxy data) for each of the practice cost components to be explicitly included in the index; and (2) data on the cost shares that serve as the weights in the Laspeyres index. Since the cost shares can be computed as the proportion of total practice revenues expended for each input, a detailed survey of practice characteristics provides a viable source of the second type of data. Two such surveys were available. One is the HCFA/NORC Physicians' Practice Costs and Income Survey; the other is the AMA Socioeconomic Monitoring System. Both are telephone surveys of physicians that collect data on hours worked, utilization patterns, fees, practice personnel, expenses, and incomes. We concluded that the AMA data that can be annually updated provided a somewhat more consistent set of cost shares. However, it is clear that usable cost shares can be derived from either source.

The potential sources of input price data were considerably less rich. With the exception of malpractice insurance, only proxy data could be found. Malpractice insurance premiums were derived from a comprehensive set of insurer rate sheets collected by HCFA's Survey of Insurers for use in the MEI calculation. A proxy for office rents was taken from the Department of Housing and Urban Development Fair Market Rent series used in the computation of rental subsidies. Although these data measure area differentials in housing costs as opposed to office costs, the policy precedent for using housing as a proxy for office rent was established when the housing component of the CPI was chosen as the price proxy for office rents in the MEI. Price proxies for the remaining nonlabor inputs--supplies, equipment, and "other"--were unavailable. Since area variations in these prices are probably less than those found in the other input prices, we treated these factors as national inputs for the purposes of developing an interim index.

Price proxies for the labor inputs--physician and nonphysician--were developed from the 1 percent public use sample of the 1980 Census of Population and Housing. Although these data may not be as current as other cross-sectional wage information, they are the most complete in terms of both occupational and area coverage. For the nonphysician labor inputs price proxies were computed from earnings of administrative support personnel, health technologists and technicians, and registered nurses. We controlled for area variations in hours worked.

Although physician earnings data are available from the Census, it would have been inappropriate to use these data to adjust geographically skewed fees because these fees are, in large part, the determinants of the earnings patterns. As an alternative, we used hourly earnings of workers in the professional specialty occupations with four or more years of college to derive a proxy for the physician earnings component of the GMEI. Since this component has the largest weight and is the only input for which there are no readily observed market prices, we closely evaluated the choice of this price proxy. It appeared that modifications in the occupational group would alter the geographic variation in the proxy, but that the education cutoff (used to obtain workers who might have preferences more similar to those of physicians) made little difference.

Once the cost share and price proxy data were chosen, we computed a number of alternative GMEIs. We began with a basic index containing those data that we viewed as the most appropriate. The effect of altering several index components was simulated. We explored indices using NORC cost share data, using a physician price proxy based on a broader occupational classification, and indices which were specialty-specific. We also considered an index that excluded the physician component, as well as an index that established a floor on the value of the physician proxy price. These analyses allowed us to assess the relative importance of the critical data decisions made in this project.

On average, the basic GMEI exhibited reasonable patterns. Practice input prices were substantially higher in urban than in rural areas and increased with MSA population size. Not surprisingly, the major anomalies in the index were the result of unexpected values in the physician proxy. Most of these arose in small MSAs where the professional earnings data from the 1 percent sample are likely to be subject to the most random errors or occupational mix

patterns. The simulations of alternative GMEIs showed that the index is not sensitive to the choice of cost share data, but is sensitive to changes in the physician proxy.

I. INTRODUCTION

Any policies aimed at reducing the wide geographic disparities in Medicare payments for physician services will need to recognize that some variation is due to justifiable differences in physician practice costs. This will be true whether HCFA chooses to implement a national fee schedule based on a relative value scale or establishes regulations that limit payments for certain "overpriced" procedures or in certain "overpriced" localities.[1] At present HCFA has no mechanism for determining geographical differences in practice costs. This report provides HCFA with necessary inputs to meet its Congressional mandate to develop an interim index "to reflect justifiable differences in the costs of practice based upon geographic location" prior to January 1, 1988.[2]

A growing literature has documented the extent of geographic variation in the utilization and costs of health services in the United States (see, e.g., the Summer 1984 issue of Health Affairs). There is generally little consensus about the reasons for these variations and what could or should be done to reduce them. For example, 1980 Medicare prevailing charge data show a range across localities of from $7.00 to $33.00 for a brief follow-up hospital visit by an internist. The desire to maintain equity across areas and to remain neutral with respect to physician location choices might lead policymakers to argue that all physicians should face the same prevailing charge for a given

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1. Omnibus Budget Reconciliation Act of 1986, PL 99-509, Section 9333.

2. OBRA 1986, PL 99-509, Section 9331(e)(1).

procedure. However, some of the fee variations may reflect local variations in physician demand, practice input costs, or the carrier definition of services included in the particular procedure. In developing this interim index, we enable HCFA to explore how one of these aspects—inter-area differences in practice costs—affects Medicare pricing patterns.

The index could be used in several types of policies. HCFA might choose to limit all prevailing or allowed charges in an area to be no more above or below the national average than are practice costs. Alternatively, these limits could be imposed on only a subset of the most costly physician services. If HCFA believed that some legitimate geographic variation in charges was due to factors related to beneficiaries' health status or to physician shortages, there might be some allowance in fees beyond practice costs. Since any of the policies can have fairly large redistributive effects, each needs to be carefully evaluated.

The basic notion of linking practice costs to the determination of Medicare physician payments is not new. Since 1975, the rate of increase in prevailing charges has not been allowed to exceed the increase in practice costs as measured by the Medicare Economic Index (MEI). The MEI measures the annual change in the costs of seven specific practice inputs—employee wages, office rents, automobiles, supplies, malpractice insurance, physicians' own time, and other inputs (a residual category). A more detailed description of the MEI is presented by Dutton and McMenamin (1981). The limit on the increase in prevailing charges imposed by the MEI is set nationally. It does not take into account differences that may exist in the rates of change in costs in local markets (currently defined as pricing localities), for certain specialties, or of specific procedures. Studying the issue of regional or specialty-specific MEIs, Berry (1981) showed that they would not result in substantially different limits on the rate of increase in prevailing charges than the national MEI.

To develop a geographic counterpart to the MEI--identified hereafter as the Geographic Medicare Economic Index (GMEI)--it seems natural to consider variation in the costs of those inputs used in the original index. However, a number of specific conceptual and operational issues will have to be addressed before even an interim index can be derived.[3]

First, for what geographic units should the GMEI be defined? Though administrative areas such as carriers and pricing localities are important to program operations, could a useful GMEI be defined across Metropolitan Statistical Areas (MSAs) or other county groups that might be conceptually more defensible? Second, what specific type of index (e.g., Laspeyres) should be computed? Third, what categories of practice costs should be recognized in the GMEI and how should they be weighted? Are all of the inputs included in the original MEI necessarily candidates for the GMEI, or can some be viewed as being sold in a national market and, as such, not be subject to geographic variation?

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3. Alternatively, limits on the degree of geographic dispersion in fees could be based on competitively-determined prices instead of on practice costs. Since fees for most physician services are distorted by health insurance, one would have to identify one or two physician services, perhaps physical examinations, that were generally uncovered by insurance. The key advantage of this approach is its reliance on the market for physician services to establish the appropriate amount of variation across areas.

This approach, however, has serious problems. First, it presumes one can identify uncovered services that are unaffected by the extent of insurance for other services. These uncovered services cannot be substitutes or complements for other services; for if they were, insurance coverage would affect the fee for the index services, albeit indirectly. Furthermore, these uncovered services could be loss leaders. That is, physicians might discount fees for specific services in order to attract patients, who then consume insured services, for which physicians charge full price.

A second potential problem is that the fees could vary geographically for demand-side reasons that the Medicare program may not want to recognize. For example, even though fees may vary directly with patient income in a competitive market, it could be inappropriate for Medicare to pay physicians more in high-income areas than in low-income areas. In spite of its attraction as a market-oriented approach, an index based on competitively-set fees does not seem to be a promising option.

Finally, and potentially most important, what data sources are available that measure geographic differences in the costs of physician practice inputs? In light of the time constraints imposed by the Congressional mandate on this interim index, we will not be able to undertake new data collection efforts. If needed, these will have to be reserved for the index refinement process. By basing the index on available data, we may be forced into a number of pragmatic compromises. While these compromises will be most directly related to the appropriate measure of input costs, they also can affect our choice of area definitions and the specific practice costs to be included in the index.

The remainder of this report is organized around the above issues. In the chapter immediately following, we consider general conceptual issues related to index structure and form and area definitions. Chapter III discusses the data sources that are available for the construction of index weights and considers a variety of weighting schemes. In Chapter IV, we focus on area variation in the costs of physicians' own time and review alternative approaches for treating this important GMEI component. For the other components, Chapter V reviews and evaluates available data sources and explores potential compromises that might be required. Actual index values are presented in Chapter VI and a number of alternative approaches are simulated. In the final chapter, we outline further refinements that might be required and identify a number of decisions still facing HCFA.

II. GENERAL CONCEPTUAL ISSUES

In developing the GMEI, two basic sets of conceptual issues need to be addressed. The first relates to the choice of the specific type of index number to be constructed and its economic interpretation. The second major issue centers around the geographic unit of analysis. Because numerous geographic entities (e.g., states, counties, MSAs, or carrier localities) could serve as the unit of analysis in the GMEI, we need a criteria for choosing among them given our objectives. These criteria and our ultimate choice of an area definition are based on both conceptual and data availability issues.

A. Defining a Geographic Medicare Economic Index

There are two structural formulations of indices that could capture area differences in medical practice costs: a cost-of-practice index could compare the costs of producing comparable outputs and a input-price index could compare the cost of comparable input combinations. The cost-of-practice index is more general by virtue of recognizing that physicians may employ different levels of the various inputs to produce the same output, both in content and quality. More technically, this index allows for production at different points along an isoquant, i.e., a set of input combinations that all result in the same level of output, depending on an area's relative input prices. The alternative, the input-price index, simply compares the costs of purchasing identical market baskets of inputs in different areas.

In general, creating a cost-of-practice index requires a standard measure of output in order to be able to hold quantity (and quality) constant when comparing input costs across areas. To understand when such an index might be plausible, consider a cost-of-production index for an agricultural product such as wheat. The price of land (and capital) relative to labor is much lower in the U.S. than it is in East Asia. As a result, farmers use more land and less labor in the U.S. One could conceivably develop an inter-country cost-of-production index because the output is fairly homogenous and can be me measured, in this case as bushels.

In the case of physician services, however, it would be difficult to develop a standard measure of output. Possibly the physician visit could be the unit of measure. But in some locations visits are longer and involve more extensive testing than in other locations. To create a plausible cost-of-practice index, one would have to maintain that visits are homogenous between urban and rural areas, as well as in different metropolitan areas. In addition, it would be necessary to assure that variation in visit volume necessarily tracked total service volume. We do not find these assumptions to be highly defensible.

The alternative type of index for the GMEI, an input price index, is constructed as if all physicians used the same combination of inputs in their medical practices, i.e., a standard input market basket. The weakness of this approach is that, unlike a cost-of-practice index, it does not allow for substitution of inputs. That is, physicians in all areas are assumed to employ inputs in the same proportion even though relative input prices vary from area to area. This problem of potential substitution bias is explored below. The strength of the index is that it focuses on variation in the input prices faced by physicians that is beyond their control. As such, the geographic variation measured is purely due to input prices and not due to physician choices regarding input utilization or technology adoption.

In addition, an input price index formulation for the GMEI would be conceptually consistent with the MEI. However, consistency with the MEI is not necessary.

The input-price index could take several structural forms, the most common of which is the Laspeyres index. Such an index can be constructed with data on the input prices that physicians face in each area and on the relative share of practice revenues accounted for by each input. These relative shares could be based on all physicians (or all physicians in a specialty) in the country. The value of the index for area j can be written as:

$$GMEI_j = \sum_i \frac{p_{ij}}{p_{in}} \quad \frac{p_{in}\, q_{in}}{\Sigma \; p_{in}\, q_{in}}$$

where p and q represent input prices and quantities, for each of the i inputs (net income, salaries, etc.) included in the index, and the subscript n denotes national average values. The term on the left is the input price relative to the national price. The term on the right is the input weight, that is, the national average cost share (expenses as a proportion of gross revenue) for each input.[4]

Although the Laspeyres index is widely used, it has the drawbacks of any input-price index with fixed weights. The primary problem relates to substitution bias--the imposed rigidity of cost shares in the face of price variation. The degree of substitution bias is, in general, a function of the elasticity of substitution among the index components and the relative price differences across comparison units. The broader the categories of inputs, the smaller the elasticity of substitute and the less the probable bias. The categories proposed below tend to be broad — for instance, secretaries, RNs and LPNs are in a single category -- suggesting that substitution bias is likely to be small. Berry's study of the MEI considered alternatives to the Laspeyres structure, several involving considerably more data and computational burden. Berry finds that using a fixed-weight index does not seem to result in substitution bias in the MEI.

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[4] In contrast to Laspeyres, an alternative input-price index is the Paasche. Here the input weights vary across areas. Clearly much more data on input use are required to compute a Paasche index.

Substitution bias is not a major empirical problem in other indices. Sherwood (1975) recomputes the BLS Family Budgets with fixed instead of variable weights across areas. He shows that there would be some changes in the index values, but that the overall differences across areas would be fairly stable, i.e., in no areas would budgets go from below average to above average budgets or vice-versa. Analysis of the Consumer Price Index (CPI) (Braithwaite 1980) uncovers very little substitution bias over a period during which the index weights were generally not updated. Some CPI subindices are more of a problem because of both large changes in relative prices and high elasticities of substitution. However, Braithwaite estimates that from 1958 to 1973 the CPI overstated the rate of inflation by only 0.1 percent annually as a result of employing a fixed-weight structure. All three studies suggest that substitution bias is unlikely to introduce serious distortions in the GMEI.

Recommendation: We recommend that the GMEI be an input-price index of the Laspeyres structural form.

Although not recognizing changes in input weights across areas, we could still develop specialty-specific GMEIs within this structure if such indices appear warranted for economic, empirical, or political reasons. The assumption of constant input proportions would be relaxed by allowing the various specialties, producing inherently different services, to diversify their inputs. At a later stage in this project, we could undertake an empirical analysis of the desirability of specialty-specific GMEIs that would closely parallel the study of the original MEI by Berry (1981).

B. Defining Areas

Regardless of data availability, GMEI areas should be defined with the following considerations in mind. First, input prices should be fairly homogeneous within an area, so that it can be reasonably assumed that all physicians within an area face the same set of input prices. Second, to minimize border-crossing, the areas should be fairly self-contained markets for practice inputs. That is, physicians whose offices are in an area with a low index but close to an area with a high index should not be provided with the incentive to move their offices across the boundary. Finally, the areas selected for the GMEI should be compatible with current administrative practices. If they are not, they should at least be relatively easy to implement or have some policy precedent.

Although, the first criterion encourages defining small areas such as counties or zip codes, employing very small areas in the GMEI may impose arbitrary divisions between input markets and create opportunities for physicians to "game" the system. Larger areas such as states or regions would limit border-crossing opportunities but would have more heterogeneous input prices, that could lead to intra-area inequities among physicians if high-cost and low-cost markets are pooled together.

While no geographic entity is a perfectly self-contained market for practice inputs, some are better than others. The input price homogeneity criterion leads us to dismiss national subdivisions such as census regions, census divisions, states, and carrier areas as too large to effectively distinguish among input markets. In fact, these areas might exhibit more cost variation within their borders than across their borders. The second criterion leads us to dismiss areas as small as or smaller than a county to avoid creating incentives for border-crossing. In selecting GMEI areas, some middle ground is needed.

The Metropolitan Statistical Area (MSA) appears well suited to fill this gap. As defined by the Census Bureau, MSAs are aggregations of adjacent counties that have close economic and social relationship. The MSA is large enough to enable most physicians to purchase all of their inputs within the MSA and yet is homogeneous enough to reflect a uniform set of prices. Because MSA boundaries are typically in low-density areas, border-crossing is unlikely to be a serious problem. If the MSA were chosen as the basis for the GMEI, physicians in rural communities would be grouped into rural areas on a state-by-state basis. The prospective payment system for hospitals (PPS) uses metropolitan areas and rural areas of states to adjust for wages, establishing a precedent for the use of such areas for physician payment.

Within MSAs, rents and wages tend to be higher in the urban core than in the suburban ring, (Abt Associates 1987). By virtue of being smaller, cores and rings would probably be more homogeneous in terms of input prices, but would have more boundary problems, albeit to a lesser extent than counties. It might be possible to derive a somewhat more refined set of GMEI areas from the basic MSA (Welch, 1987). Because no data sources exist for physician input prices that distinguish between the core and ring this issue should be viewed as a refinement of MSAs and will not be part of the interim index.

Clearly, one geographical area that would be easy to implement are the prevailing charge localities. Medicare carriers have already defined areas to compute prevailing charges for physicians, and these can be used to calculate a geographic index. However, the definition of these areas varies considerably among states: Eighteen states have a single prevailing charge statewide. Twelve have major contiguous areas, including both rural and urban in the same cell. Seven states have separate cells for each major city, and fourteen have an urban cell and a rural cell or have cells incorporating several cities of similar size. While the extant areas for Medicare physician charge administration must be considered when selecting options for the geographic index, they are derived from no common principle and, therefore, might be insuitable as the basis of a nationwide index.

Recommendation: Taking the three basic criteria into account, our preferences is to use the MSAs and rural areas as the basis for defining the GMEI, especially on an interim basis. This choice is not only appropriate conceptually, but also could use available data sources, an important consideration in the development of the interim index.

C. GMEI Areas and Pricing Localities

Even if the GMEI is defined across MSAs and state rural areas, it may initially have to be applied to the present configuration of pricing localities. We address this as a short-run necessity but believe that any movement to a national fee schedule for physicians, as implied by the 1985 COBRA legislation (PL 99-272; Section 9305), would be associated with a change in the pricing locality borders. Our basic approach to the short-run problem is to develop a mapping between the present localities and the GMEI areas--MSAs. This mapping is not perfect since locality borders do not always conform to county lines, in contrast to MSA borders. But an acceptable algorithm has been developed.

Localities that are fully contained in an MSA or rural area are assigned the GMEI of that area. Localities that are in more than one MSA or rural area are assigned a weighted average of GMEI values. The weights are the proportion of enrollees or Part B expenditures in each of the component areas. For example, the Des Moines, Iowa MSA is composed of three counties, two making up a single pricing locality and the other included in a locality that is predominantly rural. The Des Moines GMEI value is assigned to the two-county locality and then used in creating a weighted GMEI value for the rural locality.

The MSA-to-locality mapping involves three basic phases after the MSA/rural area GMEI values have been computed. First, each U.S. county is assigned its corresponding GMEI based on its location in an MSA or state rural area. Second, in those instances where localities are comprised of county-parts, we divide counties into the appropriate parts based on population and assign each part the original county's price proxy and GMEI value. Third, we derive locality-level indices as weighted averages of the county and county-part data with population serving as the weighting variables. This project has the capacity to translate MSA- or state-level data into locality-level data. This process involves a number of case-by-case decisions. However, with only 243 localities, we believe that the algorithm we developed is reasonable.

III. COST SHARES

The next steps in deriving any index--in this case a Laspeyres-type GMEI--are to decide what practice cost components should be included in the index and to determine their weights. Although our ultimate choices may be influenced by input price data availability, there are several issues that can be addressed independent of data considerations.

First, the index could include either a single set of expense weights or multiple sets which vary by specialty. Although it is our initial intent to use a uniform set of weights across areas, weights that vary by specialty might be appropriate and are considered. The reason for considering specialty-specific weights is that each specialty produces very different outputs and may be employing different input mixes.

Second, it is not necessary to assume that all potential components of practice costs exhibit geographic variation. Some may be viewed as being primarily in a national market with uniform prices. We distinguish between local and national inputs in Chapter V. Although the index could be based solely on prices that vary by geographic area, excluding national inputs from the index would overstate the extent of geographic variation in practice costs. For example, if there were two inputs of equal weight but only one varied by geographic area, excluding the national input would incorrectly double the practice cost variation. The GMEI should be based on all inputs. For inputs with no geographic variation, the relative price should equal one in all areas.

A. Choice of Inputs

Since the MEI is a well-established index of physician practice costs, we first examined its input categories as candidates for the GMEI. The present MEI has seven cost categories in its computations: physicians' own time, nonphysician employee wages, office rent, malpractice insurance, automobile expenses, medical supplies, and a residual other category. These would also be used in the GMEI. Possible expansion of this list has been proposed by the Office of the Actuary (OACT) as part of a reassessment of the MEI. However, to expedite development of an interim GMEI, we focus on the current MEI components. In particular, OACT considered including medical equipment as a new cost area. This input could be included in the GMEI as well. Although inputs in all of these areas clearly enter into the physician's production function, the precise categories for the interim index are largely determined by the availability of data from which to compute index weights. This was true in the original MEI and still holds in the GMEI.

B. Choice of Data Source for Weights

The weights in the GMEI are equal to the proportion of total physician practice revenues accounted for by each input. These cost shares can be computed from two national data sources. One data source is the 1984-85 Physicians' Practice Costs and Income Survey, a national telephone survey of physicians (N=4729) conducted by the National Opinion Research Center (NORC) for HCFA. The practice cost and income data pertain to calendar year 1983. (A detailed description is available in Sprachman, Rosenbach, *et al.*, (1985). An appendix to this chapter reviews details of our work with the NORC data with particular focus on the completeness of reported expenses.) Gross and net income were collected, together with the practice cost components of employee wages and fringe benefits, office space costs, equipment costs, medical supplies costs, and malpractice insurance premiums. Earlier versions of the survey were used in developing the cost share weights for the MEI and by Berry (1981) in studying specialty and region-specific MEIs.

An alternative data set is the American Medical Association's (AMA) Socioeconomic Monitoring System (SMS). Results from this survey are published annually in the AMA's Socioeconomic Characteristics of Medical Practice. Using this data, we calculated cost shares for two years, 1983 to be comparable to the NORC shares, and 1985, the most recent available data. Shares were computed for all self-employed physicians.

The 1983 and 1985 AMA shares for all physicians are presented along with the comparable (1983) NORC shares in Table III-1. The automobile expense component is included in the "other" cost above. The shares are generally similar, but there are some differences. The most striking is the NORC office rent weight of 5.4 percent, about half the AMA weights of 10.4 percent (1983) and 11.4 percent (1985). This difference arises from the different wording of the AMA and NORC questions. The AMA questionnaire asks for "office expenses", defined to include utilities and telphone in addition to rent or mortgage. The NORC survey asks only for rental, lease, or depreciation costs for office space. Thus, the NORC office rent category excludes utilities and telephone, and interest expense (which, along with depreciation, is a component of mortgage costs).[5]

Which office rent weight is more correct? The answer depends on whether the proxy rental rate includes telephone and utility costs. If those costs are included or are highly correlated with rental costs, then the AMA weight would be preferred. If these costs are not highly correlated and the rental figure

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5. The NORC office rent question from the 1979 survey was more similar to the AMA's, asking for office space, telephone and utilities costs. The weight computed from that survey, 9.8 percent, is much more comparable to the AMA weight. An additional factor is that, in computation of the 1983 NORC cost shares, we included physicians with zero space costs. If the AMA excluded them, their office rent share would be higher by about 0.5 percentage points for that reason.

Table III-1

Input Cost Shares: NORC vs. AMA

Source	Net Income[1]	Non-physician Employee Wages	Office Rent	Mal-practice Insurance	Medical Supplies	Medical Equipment	Other
NORC 1983	58.2	17.9	5.4	4.4	5.1	2.1	6.9
AMA 1983	57.4	14.5	10.4	3.5	4.6	2.5	7.1
AMA 1985	54.9	15.4	11.4	4.5	4.8	2.6	6.5

1. This will serve as the weight for physicians' own time.

excludes telephone and utility costs, the NORC share may be preferred. However, the omission of interest costs from the NORC office rent questions seems to have biased the NORC share downward. In a later chapter, we recommend a proxy for rents that includes utility but not telephone costs. On balance the AMA weight is probably preferable here.

Another difference between the AMA and NORC shares is the higher NORC employee wages weight, 17.9 percent compared to 14.5 percent (AMA, 1983) or 15.4 percent (AMA, 1985). This difference is probably due to the explicit adjustment that we made for payroll and nonpayroll fringe benefits when computing the NORC weight. The AMA asks for "total nonphysician payroll expenses including fringe benefits". However, AMA does not include a separate nonpayroll question on expenses for fringes such as health and life insurance, retirement benefits, and continuing education. The NORC survey explicitly asks for nonpayroll fringe benefit expenses separately. By collecting specific data on fringes nonpayroll fringes, the NORC survey and its weights probably more accurately measure of the share of total employee compensation costs. On the other hand, it is unclear whether nonpayroll fringe costs, especially health insurance, are correlated across areas with wages. Chapter V recommends using the earnings data from selected occupations as the proxy. If this recommendation is accepted, the AMA's payroll-based weight would be preferable.

A third difference is that the NORC weight for net income is 3.3 percentage points higher than the 1985 AMA weight, 58.2 percent versus 54.9 percent. Most of the difference seems to be due to the declining share of net income over time, the 1983 AMA weight being only 0.8 percentage points lower than the NORC weight. The AMA shows a rising share of malpractice insurance between 1983 and 1985, 3.5 to 4.5 percent, but in this case, the NORC weight of 4.4 percent is more similar to the 1985 AMA weight. Differences in terms of net income and malpractice premium do not provide a basis to choose between the two data sources.

Which set of cost shares should be used as weights in the GMEI? It may be desirable that the same cost shares be used in the GMEI and the MEI. If this were the case and the current MEI weights were applied, the cost shares would be based on NORC data that is almost a decade old. The MEI weights have not been recomputed since they were developed from the 1978 NORC survey. Published AMA data are more recent than NORC data, even the 1983 version, and can be updated annually. It also seems to yield more reasonable office space and residual weights. A significant disadvantage of the AMA shares is that an industry group provides the underlying data.

Besides its provider origin, the major disadvantage of the AMA data, at least in its published form, is that it does not provide an exhaustive specialty decomposition. With the published data, one is limited to all-specialty weights or weights for the few specialities the AMA breaks out. However, AMA is now selling public-use tapes that will allow for more detailed analyses. We had expected to use these data in this project. Unfortunately, delays arose in discussions between HCFA and AMA regarding the purchase of this tape. The NORC data is currently the only choice for comprehensive specialty-specific simulations of the GMEI.

C. Specialty-Specific Cost Shares

Up to this point, we have assumed that the cost shares are the same for all specialties. To the extent they differ, some specialties will be overpaid in certain MSAs and others will be underpaid there. Suppose, for example, that the cost shares for malpractice insurance are 5 percent for all physicians but 9 percent for orthopedic surgeons and 4 percent for all other physicians.

Furthermore, suppose there is a MSA where malpractice insurance costs are 50 percent above the national average but all other inputs costs are at the national average. If all-specialty weights were used, physicians in this MSA would be paid 2.5 percent above average. However, orthopedic surgeons should be paid 4.5 percent above average and other physicians, 2.0 percent above average. Orthopedic surgeons would be underpaid by 2.0 percent in this area, although in some other areas they would be overpaid. Similarly, other physicians would be overpaid by 0.5 percent in this area, although in some other areas they would be underpaid. Needless to say, the actual situation is more complex than we allow for here, but this simple example highlights the basic problem.

To investigate the differences in cost shares by specialty, we use the NORC data, because the AMA data by specialty is not available for either 1983 and 1985. Table III-2 presents NORC cost shares for all specialties and for 17 specialties. The number of physicians on which each set of shares is based is given in the first column, and standard errors are presented in parentheses under each share. (Since imputed data were used in calculating the cost shares, the reported standard errors are lower than the true standard errors, but the difference between the two is undoubtedly small.) No standard errors are given for the "other" practice costs category because it was imputed, as explained in the appendix to this chapter.

Most specialty shares are similar to the all-specialty weights. Radiologists, anesthesiologists, and pathologists (RAPs), psychiatrists, and "other" specialties stand out by having a much higher share of net income to practice costs than the other specialties. Psychiatrists have particularly low weights for employee wages, supplies, equipment and malpractice, but the

Table III-2

Cost Shares by Specialty

Specialty	N	Net Income	Non-physician Employee Wages	Office Rent	Medical Equipment	Malpractice Insurance	Medical Supplies	Other
All	2429	58.2	17.9	5.4	2.1	4.4	5.1	6.9
		(0.4)	(0.3)	(0.1)	(0.1)	(0.1)	(0.1)	
General Practice	164	54.3	22.3	4.8	1.6	4.0	7.7	5.3
		(1.4)	(1.1)	(0.4)	(0.2)	(0.4)	(0.6)	
Family Practice	292	53.8	22.1	5.7	2.2	3.3	7.6	5.3
		(1.1)	(0.8)	(0.4)	(0.2)	(0.2)	(0.5)	
Internal Medicine	262	57.6	20.4	6.2	2.3	2.7	5.0	5.8
		(1.3)	(0.9)	(0.4)	(0.3)	(0.2)	(0.4)	
Cardiovascular Disease	70	62.8	16.7	4.5	2.3	4.0	3.6	6.1
		(2.0)	(1.7)	(0.5)	(0.4)	(0.3)	(0.5)	
Pediatrics	146	57.0	22.2	6.1	2.1	3.0	7.3	2.3
		(1.4)	(1.1)	(0.4)	(0.3)	(0.3)	(0.5)	
Other Medical Specialties	155	56.5	18.0	6.5	2.4	2.4	7.0	7.2
		(1.9)	(1.0)	(0.5)	(0.3)	(0.2)	(0.7)	
General Surgery	168	57.3	17.3	5.2	1.4	7.4	4.2	7.2
		(1.5)	(0.9)	(0.4)	(0.3)	(0.5)	(0.5)	
Orthopedic Surgery	100	50.0	18.9	5.8	2.8	6.7	7.1	8.7
		(2.0)	(1.3)	(0.7)	(0.4)	(0.6)	(0.9)	
Ophthalmology	103	52.5	18.6	6.3	4.5	3.2	6.9	8.0
		(1.7)	(1.1)	(0.5)	(0.5)	(0.3)	(1.0)	
Urologic Surgery	113	56.4	17.5	5.3	2.7	5.2	5.6	7.3
		(1.2)	(0.7)	(0.3)	(0.3)	(0.8)	(0.4)	
Obstetrics/ Gynecology	170	55.8	18.3	2.7	2.7	7.2	3.9	9.4
		(1.4)	(0.9)	(0.4)	(0.4)	(0.5)	(0.4)	
Other Surgery	112	54.7	18.8	6.0	2.1	7.6	3.2	7.6
		(2.0)	(1.0)	(0.5)	(0.4)	(0.8)	(0.4)	
Psychiatry	173	77.5	8.1	7.0	0.8	1.9	0.9	3.8
		(1.1)	(0.8)	(0.5)	(0.2)	(0.1)	(0.2)	
Anesthesiology	149	74.2	10.6	1.4	0.3	8.7	0.3	4.5
		(1.2)	(0.9)	(0.2)	(0.1)	(0.5)	(0.1)	
Pathology	68	74.1	11.9	2.1	1.1	2.6	4.0	4.2
		(2.0)	(1.1)	(0.4)	(0.2)	(0.4)	(0.6)	
Radiology	113	67.0	13.9	2.7	2.9	3.2	4.8	5.5
		(1.9)	(0.9)	(0.3)	(0.4)	(0.3)	(0.5)	
Other Specialties	71	70.2	12.3	4.4	1.6	4.2	2.3	5.0
		(2.4)	(1.3)	(0.6)	(0.4)	(0.8)	(0.5)	

Notes: Standard errors are in parentheses.
The residual category shares were imputed using AMA data as explained in the appendix.

Source: 1983 HCFA NORC Physicians' Practice Costs and Income Survey.

highest weight for office rent. Anesthesiologists have very low employee wages, office rent, supplies, and equipment weights, but a larger malpractice share than any specialty.

The small standard errors of the practice cost shares indicate that the shares are estimated precisely, and that differences among specialty shares are likely to be statistically significant. Statistical differences among specialty shares were tested using multivariate analysis of variance (MANOVA), a generalization of univariate analysis of variance (ANOVA). It simultaneously tests for the effect of a "treatment" variable (in this case specialty) on a set of dependent variables (in this case, the cost shares). For a more detailed description of MANOVA and its use in testing specialty cost share differences, see Berry (1981).

Since the small standard errors of the cost shares indicate that virtually all specialty share differences are likely to be statistically significant, we began by testing for the effect of specialty on the shares of two very similar specialties, general and family practitioners. The F-statistic (Wilk's criterion) from the GP/FP MANOVA is 2.11 with 5 and 522 degrees of freedom. The associated significance value (p-value) is 6.3 percent. (Again, because of the use of imputed data, the reported significance value may be slightly smaller than the true one.) Hence, statistically, the most similar specialty shares cannot be aggregated at a 10 percent level of significance. As a further check, we also estimated a MANOVA for another similar set of specialties, RAPs. Aggregation of their cost shares was rejected at the .01 percent level of significance. These two results demonstrate that the specialty cost shares are statistically different.

While the cost shares are statistically different, many differences are not large. Aggregation of specialties with similar cost shares may be desirable to avoid needless complexity. Ideally, specialties grouped together should have similar cost shares and be similar in other ways as well. For instance, surgeons have similar cost shares and have practices that are more alike than are practices of pathologists and psychiatrists. One possible set of specialty groups is medical, surgical, RAP, psychiatric, and other specialty.

Cost shares for this specialty grouping are shown in Table III-3, with standard errors again in parentheses. (The specialty-specific AMA residual percentages were used in calculating these shares.) Separating RAPs, psychiatrists, and "other" specialties from the medical and surgical specialties seems desirable because of the much higher net income share of the former groups. Separating medical from surgical specialties, while appealing a priori, is less clear empirically. Their cost shares are quite similar, the major difference being a slightly higher surgical malpractice share.

The impact of cost share differences on GMEI values depends on the correlations among the price proxies. If, in an extreme example, all price proxies are perfectly correlated, cost share differences will have no effect on the GMEI index values.

There are important disadvantages of a policy of specialty-specific weights. The administration of an index becomes more complex and provider acceptance may accordingly be reduced. These problems must be balanced against whatever difference specialty-specific weight may make in terms of equity across areas or specialties. Including specialty-specific weights in the interim index is probably premature. However, the potential importance of this issue will be explored in Chapter VI.

Table III-3

Cost Shares by Aggregated Specialty

Specialty	N	Net Income	Non-physician Employee Wages	Office Rent	Mal-practice Insurance	Medical Supplies	Medical Equipment	Other
All	2429	58.2 (0.4)	17.9 (0.2)	5.4 (0.1)	4.4 (0.1)	5.1 (0.1)	2.1 (0.1)	6.9
Medical	1089	56.1 (0.6)	20.8 (0.4)	5.8 (0.2)	3.1 (0.1)	6.6 (0.2)	2.2 (0.1)	5.4
Surgical	766	54.8 (0.7)	18.3 (0.4)	5.5 (0.2)	6.6 (0.2)	4.9 (0.3)	2.6 (0.2)	7.3
RAP	330	71.2 (0.9)	12.2 (0.6)	2.0 (0.2)	5.7 (0.3)	2.7 (0.2)	1.5 (0.2)	4.7
Psychiatric	173	77.5 (0.1)	8.1 (0.8)	7.0 (0.5)	1.9 (0.1)	0.9 (0.2)	0.8 (0.2)	3.8
Other Specialty	71	70.2 (2.4)	12.3 (1.3)	4.4 (0.6)	4.2 (0.8)	2.3 (0.5)	1.6 (0.4)	5.0

Notes: Standard errors are in parentheses.
The residual category shares were imputed using AMA data as explained in the appendix.

Source: 1983 HCFA NORC Physicians' Practice Costs and Income Survey.

Appendix on NORC Data

The following data preparation and cleaning steps were undertaken with the NORC before calculation of the cost shares:

- The sample was restricted to self-employed physicians (N = 3372);
- Physicians who did not report net income were excluded;
- Physicians who did not report a practice size were excluded;
- Net income was adjusted for the percent not derived from the physician's main practice;
- Physicians reporting practice cost component values (e.g., equipment, office space costs) more than four standard deviations from the mean of that component were excluded;
- The values imputed by NORC for missing data on practice costs were used;
- The NORC sample weights to correct for nonresponse and the nonrandomness of the sample were used.

From the 3372 self-employed physicians, 72 were deleted through the outlier trims, 654 did not report net income (or the percent of net income not from their main practice), and 289 observations were lost because NORC did not impute missing practice cost items (NORC did not impute if any of the variables used in their imputation algorithm were also missing). Allowing for some overlap among these data trims, the final all-specialty sample size was 2429. We did not attempt to make our analysis fully consistent with Berry's (1981) earlier analysis of the MEI. Thus, we included RAPs in the all specialty weights, physicians with group size greater than 9, and physicians who reported zero office space costs.

The NORC collected employee fringe benefit costs, which should be included with wages as employee compensation. Unfortunately, the quality of these data were poor, so they could not be used directly. Instead, we developed an imputation algorithm based on averages of the data by specialty and group size. To determine total employee compensation, first wages were inflated by 10 percent to capture FICA, unemployment insurance, and other mandatory payroll costs. Then, another percentage of wages was added to incorporate health and life insurance, retirement benefits, profits sharing, and other fringe benefits the NORC collected. These percentages were the average benefit ratio of all practices in specialty and solo versus group categories, with the fringe ratio capped at 60 percent. Thus, for solo primary care physicians (GP/FP, internist, pediatrician) the fringe benefits percent was 10 percent, for group physicians 8 percent. For cardiovascular disease and other medical specialities, the fringe benefits percentages were 13 percent for solos and 15 percent for groups. For surgeons, 16 percent was used for solos and 14 percent for groups. For RAP, 17 percent was used for solos and 13 percent for groups, and for other specialities, 11 percent for solos and 13 percent for groups. When these fringe benefits percentages are added to the mandatory payroll fringe of 10 percent, reasonable total fringe benefits ratios of 18 to 27 percent result.

The practice cost shares should account for all practice costs. We had originally intended to compute total practice costs by subtracting reported net income from reported gross income. Then, a residual cost category would be calculated by subtracting the sum of the explicitly measured practice cost component from total costs. Unfortunately, when reported gross income was used in this way, unacceptably high residual costs were calculated, especially for some of the specialty-specific weights. The problem arose from several sources. First, gross and net income were reported in ranges, so gross could be either less than net or much higher. Second, per physician net but entire practice gross was collected, making it difficult to match gross and net for group physicians since physicians might account for very different proportions of the total gross. Third, gross appeared to be reported incorrectly in a significant number of cases, especially a very high gross in relation to net. These errors did not "average out" over the sample, nor did a number of edits we tried improve matters.

For these reasons and following earlier analysts (e.g., Berry, 1981), we discarded reported gross and reconstructed gross as the sum of reported net and the practice cost components. Residual practice costs were computed using published 1983 AMA data. The AMA's Socioeconomic Characteristics of Medical Practice, 1984 gives mean total practice expenses in 1983 for all physicians and for five specialities. From these data, practice cost residuals were calculated. The residual is 20 percent of the sum of practice cost components for all physicians, 13 percent for GPs/FPs, 16 percent for internists, 20 percent for surgeons, 6 percent for pediatricians, and 19 percent for obstetricians/gynecologists.

Practice cost shares were constructed as a ratio of each practice cost component to the reconstructed gross. Shares were computed for each physician and then were averaged unweighted across physicians. Table III-A1 shows the sensitivity of the all-specialty practice cost shares to a residual category ranging from 10 to 30 percent of explicitly-identified practice expenses. The variation has little effect on most shares, except, of course, the residual itself. A 20 percent residual is assumed for the all-specialty shares and for specialities not reported separately by the AMA, while the specialty-specific residual percentages given above are assumed for the five specialities broken out by the AMA.

Table III-A1

All-Specialty Cost Shares by Practice Cost Residual Percentage

Residual Percentage	Net Income	Non-physician Employee Wages	Office Rent	Mal-practice Insurance	Medical Supplies	Medical Equipment	Other
10%	60.0	18.7	5.6	4.6	5.3	2.2	3.6
15%	59.0	18.3	5.5	4.5	5.2	2.2	5.3
20%	58.2	17.9	5.4	4.4	5.1	2.1	6.9
25%	57.3	17.5	5.3	4.3	5.0	2.1	8.5
30%	56.5	17.1	5.2	4.2	4.9	2.0	10.0

The all-specialty cost shares are also insensitive to other assumptions involved in their construction. Excluding physicians with zero office space costs raises the space weight by 0.5 percentage points. Excluding RAPs lowers the net income weight by 1.5 percentage points, and raises the office space and employee cost weights by 0.5 to 0.7 percentage points. Including physician employees raises the employee compensation weight by 2 percentage points. An average of individual physician cost shares weighted by gross income lowers the the net income share by 2 percentage points and the office space weight by 0.5 percentage points, and raises the malpractice share by 0.6 percentage points and the employee compensation share by 1.8 percentage points.

IV. PHYSICIANS' OWN TIME

We now turn to the key issue in the development of the GMEI—the treatment of geographic variation in the costs of physicians' own time. Because of its large weight in the index, variation in this component could dominate other factors in the GMEI. It is unlike other inputs in that physicians do not purchase their own services, so there are no market prices that can be readily observed.

A. Underlying Theory

The basic reason for acknowledging area cost differences in this component is to compensate physicians at the same real rate across the nation. An area's real rate of compensation can be thought as the ratio of the nominal payment to the area's costs, including the "cost" of having few amenities. Unless nominal payments are adjusted by cost differentials, real payments will vary across locations. Therefore, in the interest of creating an equitable compensation system, nominal payment for own-time costs should be higher in high-cost areas.

These costs have two basic components—pecuniary and nonpecuniary. Variations in the pecuniary component are represented by differences in basic cost-of-living elements such as housing, food, fuel, and transportation. The nonpecuniary component differs across areas due to professional factors such as access to quality colleagues and the presence of modern hospitals and medical technologies, and due to personal factors such as availability of good schools, proximity to cultural events, and clean air. Physicians may choose to practice in an area with high cost of living because of the area's amenities. In the same sense, physicians may shun lower-cost-of-living areas if these areas create professional isolation or other personal compromises. In actuality, these two scenarios seem to have played out to create a relative oversupply of physicians in urban areas and a relative undersupply in rural communities.

In our consideration of how to treat the costs of physicians' own time in the GMEI, introducing nonpecuniary factors highlights the potential inequities that would result were physicians fully compensated for cost-of-living differences. Higher (lower) costs of living tend to be offset by greater (lesser) access to amenities. Consider two cities with initially the same nominal wage, same cost of living, but different level of amenities. Workers would tend to move to the city with greater amenities, bidding down nominal wages and bidding up immobile goods such as land and housing. The city with greater amenities would end up with greater cost of living, and payment based on cost of living would overpay people living there.

A large number of empirical studies have examined the explanations for regional and area wage differences. Carlino (1986) provides a good summary. Early studies sought to explain persistent regional (especially South-non-South) earnings differentials by different cost of living and mix of industry. However, regional wage differences remain even controlling for these factors. The early studies were limited by their use of aggregate earning data. More recent studies have employed the Current Population Survey and other data which include a rich set of individual worker characteristics, allowing proxies for human capital to be held constant. The most recent and/or comprehensive studies have found that when amenities are accounted for, regional wages are equal, or nearly equal. For example, Roback (1982) found that "regional differences in earnings can be largely accounted for by regional differences in local amenities". Gerking and Weirick (1983) found that controlling for cost of living, worker characteristics, and amenities, workers "have approximately the same pay rates no matter where they live". Smith (1983) concluded that "our estimates using microlevel data provide substantial support for a role for site amenities in determining real wage rates." Getz and Huang (1978) found that "cost of living, human capital, and environmental goods explain a high proportion of the variation in earnings across cities [about 75 percent]". Getz and Huang's results show that cost of living is reflected one-for-one in wage rates, ceteris paribus, demonstrating that the nominal wage rate can be used as a proxy for both amenities and cost of living.

While the negative correlation between cost of living and cost of amenities does not preclude some use of cost-of-living data to capture differences in own-time costs, it does suggest that these data must be applied cautiously, particularly in light of the desire to avoid exacerbating maldistribution problems. One approach might be to adjust area cost-of-living data by some factor that acknowledges differences in amenities. However, the difficulties inherent in quantifying amenities (discussed below) and the lack of cost-of-living data for even one-half of the geographic areas in the country suggest that other avenues need to be explored.

A more promising approach is using data on nominal incomes of some occupational group, perhaps physicians themselves or professionals. Even if such data (physicians' hourly net incomes) were available by area (and, at present, they are not), we believe the answer to this question is "no" for three basic reasons: First, using income differentials to adjust Medicare fees that seem to vary excessively across areas would be circular, because the incomes are determined, in large part, by the fees. Medicare pays 21 percent of the expenditures for physician services (Waldo, Levit, and Lazenby, 1986). This contrasts sharply with using area data on office rents, which are determined by a market in which physicians are a small section. The problem of endogenity would grow to the extent that Medicaid and private insurers may use any geographical index that Medicare might implement, just as a dozen Medicaid state agencies are using DRGs (Hellinger, 1987).

Second, area variation in third-party coverage and payment levels have distorted income patterns, so that they diverge from true relative own-time cost differences across areas. Finally, differences in the degree of consumer ignorance and competition with respect to medical services could lead to differences in physicians' utilization patterns that are unrelated to the value of their time. For these reasons, data on physician income would not be appropriate to capture variation in own-time costs and, as such, we consider alternative approaches.

In reviewing data sources that could be used to measure physician time cost variations, we considered our options along a continuum. At one extreme are options that rely solely on cost-of-living data. While these might overcompensate some areas and undercompensate others by ignoring amenities, they cannot be dismissed for our interim GMEI, especially if superior data are unavailable. In the middle of the continuum are options that would use nonphysician income data as a proxy for variation in the costs of physicians' own time.

At the other end of the continuum is the option of ignoring entirely cost-of-living and amenities differences by assuming that the cost of physicians' own time is the same in all areas. While this option may not seem politically or conceptually desirable, it may be appropriate on an interim basis if the data needed for other options are unavailable before the index is needed. Another possible approach that could be used if agreement on an appropriate data source cannot be reached would be to exclude the physician component from the GMEI and simply "pass-through" some proportion of current charges. This option will be discussed further below.

B. Data Selection Criteria

In choosing among data sources for all input price proxies, we relied on a number of guiding principles. First and foremost, the price proxy data had to capture variation in the costs of a good or service that was closely related to the GMEI expense component. For example, using wage data on manufacturing workers would probably be an unacceptable proxy for physicians' employee wages. Second, the data should be representative of input prices in all of the geographic areas for which it is available. Office rent data from a single nationwide realty company would be less desirable than information from a similar size random sample of buildings, other things equal. Third, most of the geographic areas for which the GMEI is to be defined should be represented in the data. While it is quite possible to impute data for missing areas, actual data would be preferable.

Fourth, the data sources should be relatively accessible on an ongoing basis and be available for use in the development of public policy. For these reasons, we would not draw on proprietary sources unless they were in existence for a reasonable length of time, had a sound methodological basis, were available "with no strings attached," and had no public counterparts. However, given the potential dearth of data on geographic price variation, it would be imprudent to exclude proprietary sources a priori. Finally, since geographic price differentials may change over time, the data source should be able to be updated periodically so that the GMEI can be revised at appropriate intervals.

C. Cost-of-Living Options

Our review of available cost-of-living data led us to several cross-sectional indices based on the price of a representative market basket of consumer goods and services purchased in selected areas. These include one public source—the BLS Family Budgets—and two private sources—one produced by Associates for International Research, Inc. (AIRINC) and one produced by the American Chamber of Commerce Research Associates (ACCRA). The BLS Family Budgets program was discontinued in 1981. While it might be possible to approximately update the BLS Family Budgets by applying regional inflation rates to the last budgets, the fact that this index is no longer an ongoing data source makes it considerably less attractive than it would be otherwise. The AIRINC cost-of-living index focuses on the expenditure patterns of four-person families at two income levels ($40,000 and $80,000 before taxes). It includes annually collected data on 315 goods and services covering seven major categories of expenditure (housing, food, clothing, household operations, transportation, discretionary expenditures, and income taxes). However, this index is computed for only 24 MSAs and no rural areas. One other private firm, Runzheimer and Company, will complete "made to order" cost-of-living studies for any income group in any area. However, it produces no immediately-available indices.

The most comprehensive and regularly-updated geographic cost-of-living data is the ACCRA "Inter-City Cost of Living Index". The index is produced quarterly for approximately 250 cities. The cities included in the index vary slightly from quarter to quarter depending on the participation of local chambers of commerce, which collect the data on a voluntary basis. The relative prices are combined into an index using weights which, according to ACCRA, "are based on the latest government survey data on a mid-management executive family's pattern of expenditures for consumer goods and services".

The ACCRA cost-of-living numbers seem reasonable in many cases. However, the index suffers from three serious disadvantages for use in the GMEI. First, if the weights are based on the last BLS Family Budget produced in 1981, they are a number of years out of date and it is not clear that they will ever be updated.

Second, and more importantly, the quality and comprehensiveness of the ACCRA price data are open to question. Only 59 items are priced, as opposed to 315 in the AIRINC index, for example. Moreover, whether the items priced fairly represent costs for their category is debatable. For instance, health care costs are measured by a hospital room rate, doctor and dentist office visit charges, and the price of a bottle of aspirin. Hospital and physician insurance premiums, which are more relevant, are not included, undoubtedly because it is difficult to measure the cost of a standard insurance policy across areas. Similarly, the transportation category does not include the price of a new car, only bus fare, auto maintenance, and gasoline. Another reason to question the quality of the price data is that they are reported by local chamber of commerce personnel. Although editing procedures are used, the accuracy of the data is unknown.

Another aspect of the quality problem is that the data are reported for cities, not on an MSA-wide basis. The city data do not represent MSA-wide costs accurately to the extent there are cost-of-living variations across MSAs (e.g., central city/suburb). In fact, an MSA's prices are not represented by the same city in each quarter of a year. In some quarters, the Boston MSA is represented in the ACCRA index by Brookline, one of the wealthiest of the Boston suburbs, and in others by the city of Boston. This leads to dramatic differences in relative housing costs, a major factor in all of the cost-of-living indices.

Finally, and most importantly, ACCRA cost-of-living numbers do not exist for many areas. Rural areas are generally excluded. Some nonmetropolitan cities do have ACCRA values, but their cost of living is not necessarily representative of the entire state rural area. Not even all major metropolitan areas have ACCRA indices. Chicago, for example, is not contained in any ACCRA quarterly report from the last quarter of 1984 through the first quarter of 1987. In all, over this period, 218 of 317 MSAs, two-thirds, are represented in the ACCRA data.

To derive a geographically exhaustive cost-of-living index, values would have to be imputed for areas for which ACCRA does not provide data. This could be done using a regression model including explanatory variables available at the county level (e.g., region, population size, population density, per capita income, and housing costs). (We have, in fact, estimated such a regression using the BLS Family Budgets.) However, this approach may not be reasonable for generating rural living costs, which are outside the range of most of the data.

Realistically, there are no available data that allow us to capture variation in living costs across all areas of the country. If a cost-of-living approach to the physicians' own-time component of the GMEI is desired, then some special data collection efforts would be required or present data sources would have to be creatively and imperfectly applied. A long-run option would be to resurrect and expand some form of the BLS Family Budgets program that could provide more extensive geographic coverage.

Even if cost-of-living data were available, in principle it should be used in conjunction with an amenities index. This raises an additional set of problems. Places Rated Almanac (Boyes and Savageau, 1985), perhaps the best known amenities index, is limited to metropolitan areas. More fundamentally, amenities indices, unlike cost-of-living indices, lack a theoretical base, such that there is unlikely to be agreement as to what characteristics should be included in such an index and how they should be weighted. Combining a local cost-of-living index with a local amenities index simply may not be feasible.

In sum, we recommend against a cost-of-living approach for the component of physicians' own time for two reasons. First, a earnings proxy (discussed in the next section) is conceptually preferred since it incorporates valuation of amenities as well as cost-of-living. Second, no existing cost-of-living data is geographically exhaustive, and the accuracy of available cost-of-living indices is questionable.

D. Income-Based Options

Although using physician incomes is problematical, one could use the income of other occupations as a proxy of physician nominal income. It should be made clear that we do not wish to measure area differences in actual nominal income for physicians because of the reasons cited above. Rather we wish to measure area differences in the nominal income that would correctly compensate physicians for differences in both cost of living and amenities.

The income differentials of an occupational group could be used as a proxy for those of physicians if the group has the following characteristics: There must be reason to believe that physicians and this group buy similar goods and have similar preferences regarding amenities. Otherwise, differences in cost of living and amenities will have different meanings for physicians and the proxy occupational group. The occupational group, as defined, must be homogeneous over areas, so that variations in its nominal income do not reflect variations in the composition of the group. For instance, workers in service industries could mean low-paid hotel workers in one location and high-paid interior decorators in another location.

There are two other desiderata. If occupational mix can be controlled for, it would be better to develop a proxy based on a broad group of occupations than a narrow one. A proxy based on one or two groups might be vulnerable to peculiarities of those groups. In addition, the data must be both available and reliable. Several possible data sources that can be used to measure area nonphysician income differentials have been identified: per capita income, HCFA hospital wage, Bureau of Labor Statistics' Area Wage Survey, the Census of Population and Housing, and the Current Population Survey. We review each source below.

Per capita income is perhaps the most obvious income-based measure. Availability of reliable data from the Bureau of the Census covering all geographic areas is its greatest strength. It also measures a very wide range of occupations. However, it has a number of serious drawbacks. First, the proportion of each occupational group can vary widely across metropolitan areas. So variation in per capita income might reflect variation in occupational mix, not variation in income for a homogeneous occupational group. Second, per capita income will vary across areas due to demographic factors such as family size. Per capita income will be lower in an area with a larger average family size than in an otherwise comparable area, i.e., one with similar hourly earnings. Finally, per capita income includes nonlabor income and, as such, would not focus directly on geographic earnings differentials. For these reasons, per capita income is not a promising proxy for physicians' own time.

HCFA Hospital Wage Index is based on the hospital gross average wage constructed from the 1982 HCFA Industry Wage Index Survey. The major strengths of this measure are that it is available for all locations in the country and that it is already used by HCFA for payments to both hospitals and home health agencies.

The appropriateness of using hospital wages for physicians' own time depends, in part, on the extent to which physicians and hospital employees (excluding physicians) buy similar goods and have similar preferences. One cannot test the appropriateness of the proxy with a correlation of the hospital wages and physician income, because observed physician income is a function of extraneous factors that should not be reflected in this component.

Bureau of Labor Statistics' Area Wage Survey, which measures area-level hourly earnings by occupational group, could be used as a proxy for physicians' own time. The BLS annually samples establishments (either a firm or a component such as a plant) within six broad industry divisions: manufacturing; transportation, communications, or other public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services.

The major strength of this proxy is that it is reasonably current and that each occupational group for which data are presented is precisely and narrowly defined. As such, the skills of workers in a given occupation are likely to be homogeneous in different locations. Given mobility across areas, there is reason to believe that variation in nominal earnings reflect variations in both cost of living and amenities.

These BLS data are available for several dozen occupations common to a variety of manufacturing and nonmanufacturing industries. However, most of these occupations do not include professionals. A concern is that physicians, a highly educated group, may value an area's attributes differently than do nonprofessionals who have had less education. Another weakness is that only 70 metropolitan areas are included in the survey. These do include most MSAs with populations of half a million or more. The BLS area wage survey is not a promising option.

The 1980 Census of Population and Housing appears to be the most promising source of area-specific income data. In the Census' Detailed Population Characteristics Reports, the median annual incomes of full-time workers by detailed occupational category are published for each state and for major MSAs within each state. These tabulations are based on the 20 percent sample of Census respondents who received the long form of the survey. The underlying data could be used to measure geographic variation in average hourly or annual earnings (including wage and self-employment income) within major occupational groups across the MSAs and rural areas of states. The most relevant occupational group for the GMEI is "Professional Specialty Occupations," which include, among others, lawyers, engineers, architects, teachers, and physicians. We could (and do) create a proxy for the variation in the costs of physicians' own time by measuring the variation in the earnings of professionals in general.

Overall, the major disadvantage of Census data is that it is updated only every 10 years. Moreover, it is self-reported and imperfectly controls for hours worked. A serious problem with a professional sample is that the occupational group might be heterogeneous. For instance, an attorney in New York City might be a specialist in tax law working for major corporations, but one in rural Kansas might deal with more general types of cases. Nevertheless, it is the most comprehensive source of area wage data available that could be disaggregated by occupation.

Since the published statistics do not contain information on many MSAs or on any rural areas of states, we must go back to the raw data in order to appropriately use the 1980 Census in the GMEI. This would make the 20 percent sample an impractical source of Census data for use in an index that is needed in early 1988. It would, however, be possible to draw on statistics from the 20 percent sample by mid-1988. In the short run, reasonable Census data can be derived from one of the smaller public use samples that contain virtually the same data elements as the larger file.

The most relevant public use files for use in developing the GMEI is the 1 percent or B sample. Unlike the 5 percent or A sample, it identifies most individual MSAs with 100,000 or more inhabitants, and it identifies all other MSAs in pairs so that metropolitan and nonmetropolitan areas can be studied nationwide. This type of geographic coverage is essential if the interim GMEI is going to provide information on practice costs in all types of communities.

The observations on the 1 percent sample are identified on the basis of 1980 metropolitan areas (SMSA), which were replaced by MSAs in 1983. It is necessary to update these identifiers to reflect current MSA definitions. The current MSAs differ from 1980 SMSA in two basic ways: some SMSAs have been divided into their component MSAs and some new MSAs have been defined. For MSAs that were part of 1980 SMSAs, the 1980 SMSA's data would be applied. No relevant data can be derived from the 1 percent sample public use file for a number of MSAs, primary new ones and those in Puerto Rico. These areas will be covered from our planned work with the 20 percent sample that is more flexible as a result of expanded size and the inclusion of county codes.

The Current Population Survey (CPS) contains the same type of data as the 1980 Census. It is more timely because earnings data are collected annually. CPS probably would not be desirable if it were to serve as our primary source of price proxy data for physicians' own time. However, it might be possible to use CPS earnings data for aggregated geographic areas to create update factors that might be applied to the Census data. For example, the ratio of current CPS earnings to Census earnings could tell us how earnings have changed in different geographic areas. The major strength of CPS relative to the BLS Area Wage Survey is that it would not require us to rely on earnings differentials of nonprofessionals and, as such, should be more representative of labor markets relevant to physicians.

However, because of its relatively small sample size, CPS would not support measurement at the MSA and rural area level as would the Census data. One would have to measure earnings differentials at some more aggregated geographic level. Based on our initial review of this data source, two potential aggregations seem fruitful to explore. One would measure professional hourly earnings in nonmetropolitan areas and in three different size metropolitan areas (populations of over 3 million, between 1 and 3 million and under 1 million). The second aggregation would measure earnings at the census division level. However, since areas may be more homogeneous within community type than within geographic location, the first approach is likely to result in a more appropriate update factor for own time costs in the GMEI. If this data were used in conjunction with the Census data, all MSAs and rural areas within these aggregated entities would receive the same update for physicians own time in the GMEI.

E. Other Options

The No-Variation Option. If none of the above data options appear reasonable, HCFA could consider compensating physicians for the costs of their own time at the same nominal rate in all areas. Since there are cost and amenities differences across areas, this strategy would result in area differences in real compensation for physicians' own time. Real compensation differential would develop unless cost of living and cost of amenities perfectly offset each other. While this is not likely, it is important to keep in mind the circumstances under which it would be appropriate to use a constant own-time cost approach.

Would adopting this strategy in the GMEI necessarily result in an adverse impact on Medicare beneficiaries? To what extent would there be local shortages and surpluses? Shortages may occur where cost of living is high and amenities are few. For example, physicians may avoid working in the urban cores of the largest metropolitan areas, if the high cost of living is not offset by amenities there. The suburbs of large metropolitan areas may be more attractive, combining a somewhat lower cost of living with easy access to core amenities.

Since we would still be taking other input price differences into account in the GMEI, the consequences of a constant own-time approach would be less than the consequences of ignoring all input price variations, i.e., having a single set of national fees.

However, there are other payment systems that set uniform fees for diverse geographic areas without any input price adjustment. In each Canadian province, the provincial government is the sole payer for health care. In Ontario, prices for physician services do not vary geographically (Wolfson, 1984). That is, a physician receives the same fee whether he practices in Toronto, a metropolitan area of two million people, or in a rural area on the shore of Hudson Bay. In Quebec, physicians in urban areas receive somewhat less than physicians elsewhere, and those in designated areas (presumably with physician shortages) receive an additional 20 percent (Contandriopoulos and Fournier, 1983). Ontario does not compensate for cost-of-living differentials, and Quebec, in effect, varies fees inversely to the cost of living.

The Japanese have an all-payer system in which hospital and physician fees are set nationally (Abe, 1985). A physician practicing in Tokyo, one of the largest metropolitan areas in the world, receives no more than one practicing in rural Japan. Note that the Canadian and Japanese payment systems ignore both variations in physicians' own time and variations in other inputs, including rent.

The Pass-Through Option. If a consensus develops that there are no appropriate methods for including the costs of physicians' own time in the GMEI, it would be possible to treat these costs as a "pass-through". Under this scenario, the GMEI could be based only on prices for non-physician inputs, approximately 45 percent of overall practice costs. Using this type of GMEI to adjust "overpriced" prevailing charges would mean that only 45 percent of the prevailing charge would be affected. The remaining 55 percent — the part representing physician compensation — would remain at its present levels.

The fact that this approach preserves the majority of Medicare's present geographic fee variation may be both its major strength and its major weaknesses. If fees vary across areas for legitimate economic or medical reasons that are unrelated to input costs, a pass-through would tend to mitigate any potential inequities in a GMEI fee adjustment. However, since the pass-through option means that the costs of physicians' own time are not represented by market prices, it does little to correct any geographic distortions that have developed in Medicare's physician payment system.

The pass-through option would have some similarities to the hospital-specific component in PPS, where the pricing locality is analogous to the hospital. The PPS payment is a combination of the hospital-specific rate and the federal rate; physicians fees would be a combination of the pass-through and other input price index. The analogy is incomplete in that the weight in the physician pass-through are cost weights, whereas in the PPS payments they represent policy judgments. Like hospital-specific rates, the pass-through option would decrease the redistribution involved in using an input price index.

F. Creating the Price Proxy

To create an earnings variable from 1980 Census data that would serve as a proxy for physicians' own time, three basic questions must be answered. First, from what occupational group or subgroup will the earnings data be derived? Second, will earnings be measured on an annual or hourly basis? Third, will earnings in each GMEI area be described by the mean or median for workers located there? Once these three issues have been settled, the physicians' own time price proxy can be computed readily.

To measure how physicians would value differences in cost of living and amenities in an open market, one needs to find workers who might buy similar goods to physicians and value amenities similarly. This suggests that the earnings data be drawn from workers in high-income, well-educated occupations, because one's preference for the amenities available in urban areas may increase with education. Even within an occupation, the education level could be an important screen on who should be included.

In addition, the more occupational groups included in the proxy, the less it will be subject to random errors or structural discrepancies. Random error at the MSA level occurs because the number of individuals in the sample is small. For instance, in the 1 percent sample analyzed below, Enid, Oklahoma, one of the smallest MSAs, had only 16 professionals with four or more years of college in its sample. (The 20 percent sample would, of course, increase the sample twenty-fold.) Structural discrepancies arise because of unique circumstances for particular occupations in specific areas. For instance, engineers in the Huntsville MSA may represent a larger share of professionals there than in other areas because of the NASA facility located there. To the extent that engineers are paid more than other professionals, this would increase the value of the proxy for Huntsville. Even within a narrow occupational group, enough heterogeneity may exist so that strict comparability across areas is not possible. The Huntsville value may be further distorted by the fact that aerospace engineers, presumably a dominant type at NASA, earn high incomes relative to other engineers. The proxy for another MSA may be altered by large numbers of school teachers who may be paid far below average for teachers because of local government policy. The more occupational groups included in the proxy, the more these occupational group-specific factors will tend to cancel each other out.

These factors suggest that the most fruitful occupations to use in computing a physicians' own time proxy would come from a broad classification, such as the Managerial and Professional Specialty Occupations. Table IV-1 lists the specific occupations included in this group as defined by 1980 Standard Occupational Classification. In addition, the table shows the number and the percent distribution of people who worked year round, full-time in each occupation in 1979. This broad group includes physicians, as well as engineers, lawyers, scientists, and chief executives, who might reasonably be viewed as having preference similar to physicians. It also includes occupations such as funeral directors, athletes, teachers and construction inspectors, whose preferences are less clearly similar to those of physicians.

One drawback of using a broad group of occupations, such as managerial and professional specialty occupations, is that many of the component occupational groups could be criticized as irrelevant or inappropriate for the GMEI. Why should athletics be included in the price proxy? Why should legislators be included given that their earnings are determined by local government policy instead of the market? An alternative approach would be to carefully select occupational groups to be included in the price proxy. This approach has the advantage of allowing for greater precision in defining the proxy group. The

Table IV-1

Managerial and Professional Specialty Occupations

	Workers* (in 000's)	Percent Distribution
MANAGERIAL AND PROFESSIONAL SPECIALTY OCCUPATIONS	14,559	100.0
Executive, Administrative and Managerial Occupations	8,127	55.8%
Officials and Administrators, Public Administration	302	2.1
Administrators, Education and Related Fields	243	1.7
Managers, Medicine and Health	90	0.6
Other Specified Managers	1,374	9.4
Managers and Administrators, N.E.C., Salaried	3,732	25.6
Managers and Administrators, N.E.C, Self-Employed	382	2.6
Management Related Occupations	2,004	13.8
Professional Specialty Occupations	6,432	44.2
Engineers, Architects and Surveyors	1,298	8.9
Mathematical and Computer Scientists	281	1.9
Natural Scientists	243	1.7
Health Diagnosing Occupations (e.g., physicians, dentists)	444	3.0
Health Assessment and Treating Occupations (e.g., RNs, pharmacists)	935	6.4
Teachers, Librarians and Counselors	1,405	9.7
Social Scientists and Urban Planners	147	1.0
Social and Recreation Workers	315	2.2
Religious Workers	240	1.6
Lawyers and Judges	407	2.8
Writers, Artists, Entertainers and Athletes	717	4.9

Source: Census (1983), Table 281.

*Worked year round, full-time in 1979. All education levels are included.

N.E.C. = not elsewhere classified.

very idea of focusing on those occupations in Table IV-1 suggests a need to limit workers considered for the proxy. However, even within this relatively narrow group, there are likely to be differential geographic patterns among fairly broad subgroups of occupations. If occupations that are more closely related to physicians, e.g., professional workers, imply significantly different price proxies than the group as a whole, using some subset of occupations could be justified.

However, limiting the number of occupations used in the proxy to a very small number has two major disadvantages. As the number of occupations is cut, the proxy becomes increasingly vulnerable to random error and structural discrepancies. More importantly, by raising the issue in terms of specific occupational groups, proponents of an index must defend each occupational group included. Since any given occupation may have problems as a proxy, this could become difficult.

Given the problem of defending each occupational group that is included, we suggest starting with a broad category of occupational groups and improving upon the composition of the group by including only individuals with some minimum level of education. This would conceptually improve the proxy group, because high education is a key characteristic of physicians. Unlike improving the proxy group by removing certain potentially irrelevant occupations, an education cutoff involves a single decision instead of a number of decisions. By borrowing a broadly defined occupational group from a standard classification, the index avoids the appearance of being arbitrary. If the proxy group is defined to contain only highly educated workers, certain occupations may be plausibly included in the proxy, even though their less well-educated members should not be included.

In this report we consider the choices between managerial plus professional specialties versus professional specialties and between two educational levels, including only people with at least 4 years of college and including everyone. Note that a person with 4 years of college has not necessarily graduated; data on college degree are not available in Census data. (In the 20 percent sample, one could include only people with more than 4 years of college. In the 1 percent sample, that cutoff would yield too few observations in small MSAs.)

The choice between annual and hourly earnings is more straightforward. Since we are interested in developing a proxy price for comparable units of physicians' own time, inter-area differences should not reflect differences in workers' choices regarding hours worked. Therefore, hourly earnings would be the conceptually preferred measure of earnings. The only drawback to hourly earnings is that it must be computed from the four separate survey items: annual wage income, annual self-employment income, usual hours worked per week and weeks worked per year. As such, it is susceptible to more measurement error than annual earnings. The reason for this is that most managerial and professional workers are not paid on an hourly basis and might have difficulty reporting hours worked per week. If subsequent analysis indicates that the extent of measurement error in hourly earnings is unacceptable (relative to annual earnings), we would consider using annual earnings as the price proxy. But hourly earnings is clearly the first choice.

In general, medians are viewed as better measures of true central tendency in earnings data than means which may be influenced by a few large values. We will use medians to describe area earnings in this project. Medians are also less sensitive to aberrant values due to imperfect data in a particular MSA or rural area. These aberrations may occur because of variations in the occupation mix, misreported values for earnings, or sample size.

Since the choice of a specific price proxy cannot fully be settled on conceptual grounds, we investigated the extent to which alternative price proxy definitions would result in different index values. Two proxies would yield the same values if they were perfectly correlated and if, in a regression of one on the other, the slope coefficient was 1.0. By way of contrast, if the slope coefficient was, say, .7, a MSA with a value of 10 percent above the mean under one proxy would have a value of 7 percent above the mean under the other proxy, even if the two proxies were perfectly correlated. Hence, we regressed a number of alternative proxies on one another to calculate correlation and slope coefficients. The GMEI area was the unit of observation and the correlations were weighted by GMEI area population size.

We initially considered proxies based on professionals with at least 4 years of education. The correlation between annual and hourly earnings is .97 and the slope is .89. With a null hypothesis that the slope is 1.0, the t-value is 9.57, indicating that the slope is significantly different from 1.0. The slope value indicates that for MSAs with hourly earnings 10 percent above the mean, annual earnings are, on average, 8.9 percent above the mean. Put differently, hourly earnings have slightly more variance than annual earnings. The high correlation, however, indicates that the two measures of earnings are not very different. Given concern with measurement error in the hourly variables, this strengthens our confidence in the hourly measure. On purely technical grounds, that there is little reason not to select hourly earnings over annual earnings. Given its stronger conceptual appeal, we use hourly earnings in the remainder of our analysis.

The next issue is whether the proxy group should be professionals only or managers and professionals. For hourly earnings for people with at least 4 years of college, the correlation between the managerial group and professionals is .71 and the slope is .60 (t=12.69). The slope indicates that in MSAs where professional earnings are 10 percent above the mean, executive earnings are only 6.0 percent the mean. These two groups seem to be sufficiently different that combining them to create a proxy based on the larger group is probably not advisable.

Finally, we considered the effect of the education cutoff. In terms of hourly earnings for professionals, the correlation between people with 4 years of college and everyone else is .96 and the slope is 1.00 (t=0.23). Our hypothesis was the education cutoff might create a pool of workers with substantially different preferences for area amenities and, as such, with different geographic patterns of earnings. The correlation and slope do not support that conclusion. It appears that, once we focus on a well defined set of occupations, restrictions based on education do not change things. However, since there is virtually no difference between these two measures and since earnings for professionals with at least 4 years of college seems conceptually more defensible, limiting the proxy group by education is preferable. Although we were unable to investigate it here, it may be preferable to further limit the proxy to people with more than 4 years of college. This issue will be explored once we are able to acquire data from the 20 percent sample.

Based on this analysis, the price proxy for physicians' own time in the GMEI will be based on median hourly earnings of workers in professional specialty occupations with 4 or more years of college completed, as reported in the 1980 Census of Population and Housing.

G. Relationship of the Price Proxy to Cost of Living

An earnings proxy for physician time should reflect cost-of-living differences as well as amenity variations. Moreover, if high cost-of-living areas are also high amenity areas because people moving to high amenity areas bid up the price of immobile resources such as land and housing, earnings should vary less-than-proportionately with cost-of-living.

We tested these hypotheses by regressing MSA professional specialty hourly earnings on MSA cost-of-living as measured by the ACCRA inter-city cost-of-living index. We had ACCRA data for 209 MSAs for at least one quarter from the last quarter of 1984 to the first quarter of 1987. For MSAs with multiple quarterly values over this period, we averaged the observations to smooth any random fluctuations. The ACCRA and professional specialty earnings indices were standardized to have a population-weighted mean of 1.0 for the 209 city sample, and the regression was population-weighted.

The first hypothesis, that the earnings data reflect cost-of-living variation, was confirmed, although not resoundingly so. The correlation between professional hourly earnings and the ACCRA index is a moderate .5, indicating a significant positive association between the two variables, but with a substantial amount of "noise". Several reasons may explain why the association is not stronger. First, as we argued above, the ACCRA index probably measures cost-of-living differences with considerable error. Hourly earnings from the 1 percent sample is also subject to considerable sampling error. Thus, the relationship between these two imperfect measures may be much weaker than the "true" relationship between earnings and cost of living. Second, unmeasured amenities, which lower earnings but raise cost of living, weaken the observed relationship between the two variables.

The second hypothesis, that earnings varies less than proportionately with cost of living, was confirmed. The slope coefficient is .50, significantly below 1.0 at the .01 level. This implies that when ACCRA cost-of-living is 10 percent above the average for the sample of 209 cities, professional hourly earnings are only 5 percent above mean earnings, on average. Professionals, presumably including physicians, apparently are willing to accept earnings which do not fully compensate them for cost-of-living differences because amenities are greater in high cost-of-living areas. A cost-of-living proxy would overcompensate physicians in high cost-of-living areas, so that an earnings proxy is preferred.

V. INPUT PRICE PROXIES

While the MEI provides useful guidance in both the selection of expense components for the GMEI and the development of weights, its input price proxies are not particularly useful here. The reason for this is that the MEI is designed to measure changes in practice input prices over time instead of across areas. For example, while the housing component of the CPI may be a good proxy for the rate of change in office rents, its design provides no information on differences in office rents between New York and San Antonio. Therefore, we have undertaken an extensive search of data that might capture geographic differences in nonphysician input prices.

A. Identifying Local and National Inputs

Not all input prices included in the GMEI necessarily vary across areas. There is no doubt that employee wages, office rents, and malpractice insurance are all inputs sold in geographically separate markets, and their cost differences should be recognized in the GMEI. It seems equally plausible that medical supplies, including drugs and other materials, and medical equipment can be treated as national inputs. Unfortunately, since data needed to validate this assertion are unavailable, we must assume that these inputs do not vary geographically in order to compute an interim GMEI. The "other" cost category, by its nature, is somewhat unclear with regard to the need to allow for regional variation. Tables from the recent OACT study suggest that the "other" category primarily covers the costs of continuing medical education (CME), office supplies, and miscellaneous inputs. While the miscellaneous category in this component might exhibit regional variations, we would treat this as a national component as well.

Automobile operating expenses relating to fuel, insurance, taxes, and maintenance probably vary across geographic areas, but it would be safe to treat the purchase price of an automobile as uniform nationally. In addition, rules governing the costs of interest and depreciation are established nationally by federal tax law. Therefore, since automobile expenses represent only about 2 percent of physician revenues and since interest and depreciation account for over 25 percent of these outlays, not recognizing geographic variations in this component of practice costs probably would not create major distortions. Of course, if appropriate data are available, this component could be treated differently when the interim index is revised.

Based on the cost shares present in Chapter III, only about 15 percent of total practice costs would not be allowed to vary geographically in the interim GMEI. Unless the treatment of these inputs is grossly incorrect, our approach should capture the bulk of the legitimate variation in practice input prices.

B. Office Rents

Although there are no data sources on rental rates for physician office space in different locations, there are three possible proxies. Surveys of commercial office rents are available from two trade associations. The Building Owners and Management Association International (BOMA) and the Institute for Real Estate Management (IREM) both produce annual reports containing data on between 50 and 70 cities. While the primary focus of both surveys is on building incomes and expenses, the BOMA report does contain information on rents per square foot by city. Though these are private sector sources, published reports are easily purchased. The main drawback of these data is that the surveys include only about 2,000 buildings nationwide and cannot credibly cover all geographic areas. In fact, they are not necessarily representative of all the 50-70 cities for which data are produced.

The third proxy is apartment rent data that are produced by U.S. Department of Housing and Urban Development (HUD) for all areas with a Section 8 housing assistance program. These data are published annually in the Federal Register and represent the 45th percentile rent for various sized units in each geographic market. HUD uses 1980 Census or American Housing Survey data updated to the current year with the CPI. These "fair market rents" are used in the computation of the Section 8 rental subsidy. A key advantage of this price information is its availability for all MSAs and rural counties.

A weakness of this proxy is that physician offices are in commercial as well as in residential buildings. Unfortunately, we could find neither data on the proportion of physician offices in each type of building nor statistical evidence on how closely residential and commercial rents track each other across areas. However, residential and commercial rents are likely to be correlated at the metropolitan-area level because the same factors—such as density, construction costs, in- or out-migration, and income—affect both. Clearly one cannot speak of two separate markets, in part because residential units are sometimes converted into commercial units and vice-versa. While the exact relationship between housing rents and physician office rents is unknown, the fact that the MEI uses the housing component of the CPI as a proxy for changes in office rents suggests that fair market rents would be a viable proxy in the GMEI.

Alternatively, area differences in rents might be captured with area differences in building or construction costs. For instance, HCFA is currently developing an index (published in the Federal Register, May 19, 1987) to adjust capital payments under PPS. This index uses Dodge/Data Resources, Inc. data on nonresidential "institutional" construction costs to compute an index for each MSA and state rural areas. Any construction costs index would ignore operating expenses that are incurred by building owners or implicitly assume that they do not vary geographically. In addition, it ignores market demand conditions for office space which have a major influence on rents, since only a small fraction of the stock of buildings is new construction each year. This proxy would be less desirable than credible rental data.

We recommend using fair market rent data for this component. The major weakness of this price proxy relates not to its data source but rather to a single value being applied to an entire metropolitan area. That rents are higher in the central city than in the suburbs is one of most fundamental economic patterns of metropolitan areas. Unfortunately, there are several problems with defining GMEI areas that are components of MSAs, as discussed in Chapter II.

C. Nonphysician Employee Wages

Aside from physician time, the largest cost component of the GMEI is employee compensation. The choice becomes especially important if a "pass-through" option (see Chapter IV) is chosen for physician time. If the GMEI were limited to nonphysician practice costs, employee compensation would be the dominant category in the index, and its proxy would have the major effect on the index values.

Potential Data Sources

Two data sources contain information on annual compensation and employment in most two-, three-, and four-digit industries (office of physicians is SIC 801). One is a Bureau of Labor Statistics source compiled from reports submitted by employers to state unemployment insurance (UI) agencies. Called ES-202 data, these were used to compute the original area wage index used in PPS. The other source, summarized by the Bureau of the Census in Country

Business Patterns, is gathered by the Internal Revenue Service from employment covered under the Federal Insurance Contribution Act (FICA). Either of these sources could be used to produce statistics on annual wages per employee in offices of physicians at geographic areas as small as the county-level. In terms of geographical differentiation, they would be ideal for use in the GMEI.

However, they are not without their drawbacks. Neither source distinguishes full-time from part-time employees, and, to the extent that these employment practices vary across geographic areas, this can introduce serious biases in relative wages across areas. In fact, this problem resulted in HCFA conducting a special hospital survey to develop a PPS wage index not dependent on ES-202.

A more serious issue for the GMEI relates to the type of workers whose salaries are covered in the ES-202 and FICA data bases. While self-employed workers are not included in these data, review of the data and discussions with BLS and Census staff suggest that many physician salaries are probably included. Though three-quarters of physicians are effectively self-employed, their salaries seem to be included because they are technically employees of their practices' professional corporation. As such, their salaries are subject to both UI and FICA taxes. In 1985, this resulted in an ES-202 annual wage per employee nationally of $35,083 for offices of physicians as compared to $17,935 for general medical and surgical hospitals (SIC 8062).

The apparent inclusion of many physicians has altered the geographic relative wages as well as the absolute level of wages. In a number of instances, the relative state wage levels indicated by the annual wages per employee are highly implausible (BLS, 1986). For example, the ES-202 data imply that physician employee wages in New Hampshire (annual wage = $27,110) are 35 percent higher than in a very similar neighboring New England state, Vermont (annual wage = $20,020). Similarly, wages in Oregon (annual wage = $31,340) are reported to be 76 percent higher than in neighboring Washington state (wage = $17,796), and wages in the District of Columbia ($39,516) are 82 percent higher than in Delaware ($21,744). These examples demonstrate that the ES-202 data are unusable for the GMEI employee price proxy.

An alternative proxy for the wages of physicians' employees is the PPS hospital wage index. This index is based on the average hourly wage of hospital employees in each MSA and state rural area derived from the HCFA Hospital Wage Surveys (1984 and 1982). The advantages of using these data in the GMEI are that they: (1) are available for all relevant areas; (2) do not suffer from full-time/part-time worker biases; (3) measure the wages of medical workers; (4) are high-quality data subject to audit; (5) are relatively recent (1984); and (6) are expected to be regularly updated.

The major criticism of this price proxy for the GMEI is that the occupation mix of workers in physicians' offices is different from the mix of hospitals. In particular, physicians employ a much higher proportion of clerical/administrative support personnel. The share of physician employee compensation paid to clerical and administrative support personnel exceeds 50 percent (see below). Conversely, clerical workers' share of the HCFA hospital wage index is only 12.5 percent (Federal Register, September 3, 1986).

If the wages of clerical and other hospital workers are highly correlated geographically, then the PPS wage index may be a good proxy for physician employee costs in spite of the different hospital/physician office occupation mix. We computed correlations of the PPS index with three clerical wage indexes: (1) the 1986 BLS Office Clerical Wage Index, based on the BLS Area Wage Surveys, which is available for approximately 150 MSAs and areas; (2) the Life Office Management Association (LOMA) 1986 Clerical Wage Index, based on the LOMA survey of insurance company branch offices, which is available for approximately 175 cities; and (3) the 1979 median annual earnings of administrative support personnel, including clerical, who worked full-time, year-round, from 1 percent 1980 Census data. The correlation coefficients are .66, .76, and .74, respectively. While fairly high, these correlation coefficients are substantially below one.

While the PPS wage index is a reasonable employee wage proxy, a proxy specific to the physician office occupation mix is preferred. To define such a proxy, two types of information are necessary. First, the proportion of physician employee wages (paid to different occupational groups) is needed to derive occupational weights. Second, a geographic wage proxy for each occupation must be developed. Data on the occupation mix of employees in physicians' offices is available from the 1983 NORC survey, discussed in Chapter III. It can be combined with national earnings weights to estimate the proportion of employee compensation paid to different occupations. Appropriate geographic wage data is more difficult to locate. The BLS and LOMA clerical wage indexes are respected and frequently updated sources of clerical wage information. Although they are available for many areas (the BLS index for about 150 MSAs and areas, and the LOMA index for about 175 cities), index values are not defined for a large number of areas, especially small cities and rural regions. The lack of comprehensive geographic data severely limits the usefulness of these two indexes. Geographic wage data for medical occupations is even more sparse. The BLS conducts a triannual hospital wage survey by detailed occupational category, but only for 23 large MSAs.

The only geographically comprehensive source of wage data for detailed occupational categories is the 1980 Census of Population and Housing (see Chapter IV). The Census data provide the detailed occupational decomposition, the geographical comprehensiveness, and the large sample size that is necessary to construct accurate wage indices. We propose to use this data source for the employee proxy as well as the physician proxy. We now discuss the development of the occupational weights and corresponding wage indices for the employee proxy.

Occupation-specific Employee Expenditure Weights

The NORC survey collected expenditure data for nonphysician employees but these data are not disaggregated by occupational category. However, counts of nonphysician employees per practice were obtained. The four occupational categories defined for use here are:

- Clerical and administrative support personnel (the NORC category of secretaries, receptionists, bookkeepers, and office managers);
- Registered nurses (including small numbers of physician's extenders, CRNAs, social workers, and psychologists);
- Licensed practical nurses (LPN); and
- Medical technicians and aides (this category is later combined with LPNs).

Clerical workers are the dominant type of physician employee, accounting for 66.0 percent of employees. RNs are the next largest employee category with 15.8 percent, followed by medical technicians with 11.0 percent, and LPNs with 7.2 percent. Among the specialties, psychiatrists employ almost exclusively clerical personnel, while anesthesiologists employ a high proportion of RNs (probably including many CRNAs), and pathologists and radiologists employ a high proportion of technicians and very few nurses.

The occupational proportions must be adjusted by the earnings levels of the occupations to estimate the share of nonphysician wage expenditures in each occupation. Since occupational expenditure proportions are unavailable per physician, we used national earnings weights from the 1980 Census (1983, Table 222) for each occupational category. This table gives the 1979 median annual earnings of full-time, year-round workers (i.e., those who worked 50 or more weeks and 35 or more hours per week) by detailed occupational decomposition. Figures are reported separately for men and women, so we took an average weighted by the number of male and female workers in each occupation. The resulting matches are as follows (weighted annual earnings are in parentheses): for NORC clerical and administrative support personnel, we used Census "administrative support personnel, including clerical" ($11,761); for the NORC RNs, we used the Census "registered nurses" ($14,975); for the NORC LPNs, we used the Census "licensed practical nurses" ($10,381); and for the NORC medical technicians and aides, we used the Census "health technologists and technicians" ($11,837). This last match is not ideal because the Census health technologists and technicians includes LPNs—the Census does not break out non-LPN health technologists separately in their published data—but any bias will be small.

The expenditure share for each occupation is the amount paid to workers in each occupation, divided by total employee wages. Equivalently, the expenditure share can be calculated as each occupational proportion, weighted by earnings, divided by the earnings-weighted sum of the proportions. We performed this calculation with the NORC employee proportions and the Census earnings levels to estimate nonphysician wage cost shares. The expenditure shares are reported in Table V-1 for all physicians and by specialty. In effect, these cost shares decompose the overall employee wage cost share into components relating to each of the four occupational categories. The expenditure shares are quite similar to the employee proportions. The all-specialty clerical share is slightly smaller (63.7 percent versus 66.0 percent) because

Table V-1

Physician Employee Cost Shares by Occupation and Specialty

Specialty	Overall Employee Wage Cost Share	Percentage of Overall Cost Share Attributed To			
		Clerical	RNs	LPNs	Medical Technicians
All	17.9%	63.7%	19.4%	6.1%	10.7%
General Practice	22.3	57.5	25.1	9.0	8.4
Family Practice	22.1	53.5	23.4	10.7	12.4
Internal Medicine	20.4	64.3	16.8	7.2	11.7
Cardiovascular Disease	16.7	67.0	18.0	5.5	9.6
Pediatrics	22.2	55.6	24.4	9.2	10.8
Other Medical	18.0	64.7	15.8	5.2	14.4
General Surgery	17.3	67.9	22.0	5.9	4.2
Orthopedic Surgery	18.9	68.1	11.7	3.0	17.2
Ophthalmology	18.6	68.3	17.0	3.0	11.7
Urology	17.5	70.9	17.8	4.6	6.6
Obstetrics/ Gynecology	18.3	57.7	27.7	8.2	6.5
Other Surgery	18.8	73.5	14.0	4.6	7.9
Psychiatric	8.1	88.4	10.0	0.8	0.8
Anesthesiology	10.6	52.9	44.6	0.3	2.2
Pathology	11.9	56.8	5.6	0.0	37.6
Radiology	13.9	63.4	2.1	0.5	34.0
Other	12.3	77.5	10.9	2.9	8.8

Source: 1983 HCFA NORC Physicians' Practice Costs and Income Survey.

of lower relative clerical earnings, while the RN share rises (19.4 percent versus 15.8 percent) because of the higher relative RN earnings. The LPN and technician shares are slightly lower than the employee proportions. The next section describes the calculation of wage indices which correspond to each of the occupational categories.

Geographic Wage Indices

To calculate the occupation-specific wage indices, we used data from the 1 percent sample of the 1980 Census, which is described in Chapter IV. Median 1979 annual and hourly earnings of full-time, year-round workers for each MSA and state rural area was calculated for the following occupational categories:

- Administrative support occupations, including clerical;
- Registered nurses; and
- Health technologists and technicians (including LPNs).

As in the case of the proxy for physicians' own time, we used hourly earnings instead of annual earnings. Hourly earnings is conceptually preferred since it standardizes for the amount of time worked. Many clerical and medical workers of the type under consideration are paid on an hourly basis, and should report hours worked accurately. The potential for reporting errors seems to be less of an issue here than in the case of professional hourly earnings.

The 1 percent sample yielded very small or zero sample sizes for a large number of MSAs or state rural areas for the medical occupational categories. Five wage observations for an occupation in an area was selected as the minimum acceptable sample size. On this criterion, 22 percent of the areas had unacceptably small sample sizes for RNs, and an even greater proportion for LPNs and medical technicians separately. (Note that these 3 groups constitute only one-third of this proxy.) For this reason, LPN and medical technician categories were collapsed into one and the Census "health technologists and technicians" category, which includes LPNs, was used as the wage proxy. Even so, over 28 percent of the areas had unacceptably small samples for the technician/LPN category.

Wage data for areas with unacceptably small sample sizes was imputed. (When the 20 percent sample is used, imputation will not be necessary. It was not imputed for the physicians' own time proxy.) The PPS hospital wage index, was used as the imputation variable. It was expected to be highly correlated with the medical wage variables since it measures the wages of hospital workers. Based on areas with acceptable sample sizes, the estimated RN imputation regression is

$$\log\text{ (RN wage)} = 1.93 + 0.59 * \log\text{ (PPS wage index)};\ R^2 = .33,$$

and the estimated technologist imputation regression is

$$\log\text{ (technologist wage)} = 1.70 + 0.75 * \log\text{ (PPS wage index)},\ R^2 = .40.$$

Missing values of the RN and technologists wages were imputed from these regression results, using actual values of the PPS wage index to predict missing values of the two wages.

After these preliminary steps, a complete set of administrative support, RN, and technician/LPN median hourly wage rates was available for each MSA and state rural area.[6] An index was created from each set of wage rates by dividing the wage rate for each area by the 1980 population-weighted average across areas of the wage rates. The resulting three wage indices—one for administrative support personnel, one for RNs, and one for technicians/LPNs--were then converted into the employee wage proxy by multiplying each by the corresponding expenditure weight from Table V-1, and summing (the expenditure weights for the LPN and technician categories were summed to match the aggregated wage proxy). This method of computing the employee proxy in effect decomposes the overall employee cost share into three occupation-specific components, each with its own wage proxy. Both an all-specialty employee wage proxy and separate proxies for each of the 17 specialties for which weights are reported in Table V-1 were computed. The specialty-specific wage proxies, along with specialty-specific cost shares (see Chapter III) and other specialty-specific price proxies (e.g., malpractice), can be used to define specialty-specific GMEIs.

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[6] In two of the smallest MSAs (Kokomo, IN, and Muncie, IN), the values of the administrative support wage were exceptionally and implausibly high. Here we used the wage for secretaries, a component of administrative support personnel. The wage was corrected for differences in the means of the two groups.

Whereas the data from the 1 percent sample is restricted to full-time, year-round workers, many clerical workers, nurses, and medical technicians work part-time. Part-time workers (perhaps people who worked 30 or more weeks per year and 15 or more hours per week) should be included when the 20 percent sample is used, because they are a legitimate part of the labor market that we are measuring, and because the sample size will be increased. Since the employee wage proxy will be based on hourly rather than annual earnings, the lower work effort of part-time workers will be automatically accounted for in median earnings. By including part-time workers, an adequate sample size should be achieved in every area with the full 20 percent Census sample.

D. Malpractice Insurance Premiums

While there is not a single data source that presents malpractice insurance premiums for all specialties and insurance jurisdictions (generally, states), such data can be compiled from a survey of a small number of major insurers at relatively low cost. Since 1975 HCFA has conducted such a survey to estimate the change in the average annual premium of a policy providing $100,000/$300,000 of professional liability coverage. This estimate is used in the MEI, and the underlying data can be used in the GMEI.

Although we propose that the GMEI be defined across MSAs and rural areas of states, premiums vary primarily by state (within specialties) and, therefore, will not be defined uniquely for each GMEI area. In effect, the market area for malpractice insurance is typically the state, not the MSA. In those states with multiple pricing areas, premiums have been weighted by the pricing area's share of physicians in the relevant specialty to produce average premiums by state that can be used in the interim GMEI. This weighting was done for another Urban Institute project that requires state-level data on premiums. As this interim GMEI is further refined, it would be possible to acknowledge MSA-level variations in premiums where they exist.

For most states, the source of premium information is the St. Paul Fire and Marine Insurance Company, the nation's largest medical malpractice insurer. In states where St. Paul does not have one of the top three market shares, other companies' rates were used. However, since the purpose of the HCFA survey is to derive a national estimate of the change in premium, it need not and does not contain premium data for every state in all years. Fortunately, there are some years of data for all states, so that missing values can be imputed for a particular state in any given year. To have a complete set of observations for 1985 (the most recent year for which data were available to us at this time), we imputed premiums for Alaska, Hawaii, New Hampshire, New Mexico, and Rhode Island based on a pooled cross-sectional regression using premium data covering 1974 to 1985.

Since the type of policy affects the premium, it would be inappropriate to make premium comparisons across areas unless all areas are represented by a uniform policy type. In these data, policies differ both in terms of the limits and type of coverage. The 1985 premium data contain rates for mature claims-made and occurrence type coverage. Mature claims-made insurance covers all claims brought during the policy year and any preceding year the physician was insured by the same company. Occurrence insurance, on the other hand protects against claims resulting from a potential act of malpractice in the policy year, no matter when the claim is brought. In general, claims-made premiums are lower than occurrence premiums, holding the level of coverage constant.

The regression model used to fill in missing values also provided an estimate of the average difference in premiums for these two policy types. Occurrence premiums ranged from about 70 percent (for orthopedic surgeons) to 15 percent (for general surgeons) higher than mature claims-made premiums. Premiums from states that reported only for occurrence policies in 1985 were adjusted so as to make them comparable to the dominant type of coverage, mature claims-made. This adjustment was required in Michigan, Missouri, New York, Ohio, and Texas.

There was also the need to adjust premiums from California because of differences in the level of coverage. The major insurers in California only sell policies with $1 million/$3 million limits of coverage. Therefore, the premiums provided for these policies are not directly comparable to those from other states. To derive premiums for California that represent the $100,000/$300,000 limits of coverage and can be used in comparisons, we multiplied the reported California premiums by our best estimate of the ratio of a $100,000/$300,000 premium to a $1 million/$3 million premium. This adjustment factor is computed as the average of this ratio for the 6 states whose insurers provided premiums for both types of policies in any year. These states were Alaska, Illinois, Maryland, Massachusetts, New Jersey, and New York. On average, the $100,000/$300,000 premium is about 60 percent below the $1 million/$3 million premium.

Since states with high premiums for one specialty tend to have high premiums for others, one might conclude that it does not matter which specialty's premium is used as the prime proxy for the GMEI malpractice insurance component. However, Table V-2 shows that, despite high correlations between specialties, premium differentials among states are not uniform. This suggests that basing the malpractice price proxy on a single specialty's premium could make the GMEI quite sensitive to the choice of this specialty. To avoid this problem, we propose using a weighted average of several specialties' premiums.

Malpractice insurers group specialties into between 7 and 9 risk classes and set premiums for a risk class rather than for each individual specialty. The data available to us (in a machine-readable format) cover physicians in 3 risk classes. We have data for general practitioners who do not do surgery (representative of all low-risk specialties), general surgeons (a moderate-risk group), and orthopedic-surgeons (a high-risk group). Since these premiums are not limited to a narrow band of physician specialties, they can be used to compute an average premium for a fairly broad Medicare "weighted" specialty to use in the GMEI. The premiums weights can be equal to the approximate share of Medicare physician spending accounted for by each risk class as computed from data in Burney and Schieber (1985). The weight for the general practitioner's premium is 0.55, the general surgeon's premium 0.33, and the orthopedist's premium 0.12. This procedure yields a single 1985 premium for each state that

Table V-2
1985 Relative Malpractice Insurance Premiums for a $100,000/$300,000 Mature Claims-Made Policy by State for Selected Specialities[a]

	General Practitioners	General Surgeon	Orthopedic Surgeon	Medicare "Weighted" Specialty[b]
Alabama	0.72	0.75	0.66	0.72
Alaska	1.41	1.01	1.14	1.12
Arizona	1.19	1.26	1.11	1.21
Arkansas	0.29	0.28	0.24	0.27
California	2.04	1.58	1.50	1.65
Colorado	0.67	0.70	0.61	0.67
Connecticut	0.94	1.01	0.89	0.96
Delaware	0.56	0.57	0.50	0.55
District	0.99	1.05	0.92	1.00
Florida	1.34	1.41	1.24	1.35
Georgia	0.67	0.70	0.61	0.67
Hawaii	0.99	1.07	1.12	1.07
Idaho	0.83	0.88	0.77	0.84
Illinois	1.28	1.42	1.23	1.34
Indiana	0.51	0.54	0.47	0.51
Iowa	0.67	0.71	0.62	0.68
Kansas	0.76	0.79	0.81	0.79
Kentucky	0.67	0.70	0.62	0.67
Louisiana	0.74	0.78	0.68	0.75
Maine	0.82	0.85	0.75	0.82
Maryland	0.86	0.76	0.76	0.78
Massachusetts	0.84	0.91	1.09	0.95
Michigan	0.95	1.29	1.39	1.25
Minnesota	0.75	0.79	0.69	0.75
Mississippi	0.76	0.79	0.70	0.76
Missouri	0.50	0.67	0.95	0.71
Montana	0.73	0.77	0.67	0.73
Nebraska	0.45	0.46	0.40	0.44
Nevada	0.94	0.99	0.87	0.95
New Hampshire	0.53	0.57	0.52	0.55
New Jersey	1.12	1.19	1.05	1.14
New Mexico	0.73	0.79	0.69	0.75
New York	2.03	1.89	2.62	2.11
North Carolina	0.41	0.41	0.36	0.40
North Dakota	0.67	0.71	0.62	0.68
Ohio	0.51	0.66	0.63	0.62
Oklahoma	0.42	0.44	0.52	0.46
Oregon	0.88	0.94	0.83	0.90
Pennsylvania	0.96	1.15	1.01	1.08
Rhode Island	0.75	0.73	0.63	0.71
South Carolina	0.51	0.52	0.53	0.52
South Dakota	0.74	0.78	0.68	0.75
Tennessee	0.36	0.37	0.32	0.35
Texas	0.43	0.49	0.49	0.47
Utah	0.61	0.64	0.56	0.61
Vermont	0.44	0.45	0.40	0.44
Virginia	0.57	0.60	0.54	0.58
Washington	0.94	1.00	0.88	0.96
West Virginia	0.49	0.50	0.44	0.48
Wisconsin	0.60	0.64	0.56	0.61
Wyoming	0.58	0.60	0.53	0.58
National Average[a] Premium($)	2037	9385	12773	5750
Correlation with General Practioners	na	0.95	0.90	0.97

a. For each specialty, 1985 premiums are reported as the ratio of the state's premium to the national average, which is a weighted average across states where the weights are the states' population.

b. The three individual premiums have been added together with each one receiving a weight equal to the approximate share of Medicare physician spending accounted for by that specialty's risk class; 0.55 for general practitioners, 0.33 for general surgeons and 0.12 for orthopedic surgeons.

can be used to compute the relative price proxy for the GMEI. The normalized price proxy shown in the final column of Table V-2 will serve as the malpractice component in the GMEI.

While this approach yields premium differentials for a "constant-coverage" policy ($100,000/$300,000 mature claims-made), it does not address the relative costs of being equally protected from losses that exceed the policy limits. A $100,000/$300,000 policy affords more protection in a state with historically low awards, e.g., North Carolina, than it does in a state with high awards, e.g., Florida. "Constant-risk" premiums, by adjusting for interstate differences in risk exposure, are superior to "constant-coverage" premiums for use in the GMEI, especially if risk differentials are not a function of physician behavior. A methodology has been derived by RRC, Inc. (1986) to compute "constant-risk" premiums. Once one has complete data on the "constant-coverage" policies (and some available auxiliary data), the approach allows for the computation of "constant-risk" premiums. Unfortunately, RRC has never had data on more than 42 states in any year, making its use in the GMEI impractical at this time. Although the across-area variation in "constant-risk" premiums exceeds that in "constant-coverage" premiums, we recommend using the latter in the interim GMEI until the RRC data can be expanded to the entire nation. (It is our understanding that HCFA is currently funding this project.)

* * *

Table V-3 summarizes the results of the discussion in the preceding 2 chapters of the report. We recommend specific price proxies for each of the GMEI components that vary geographically: physicians' own time, employee wages, office rents, and malpractice insurance.

Table V-3

Recommended Price Proxies for the GMEI

Component	AMA Weight	Price Proxy (Source)
Physicians' Own time	.574	Median hourly earnings of workers in professional specialty occupations with 4 or more years of college (1980 Census of Population and Housing)
Nonphysician Employee Wages	.145	Median hourly earnings of workers in administrative support, health technologist, and registered nursing occupations (1980 Census of Population and Housing)
Office Rents	.104	Fair Market rent for a uniform size apartment (U.S. Dept. of Housing and Urban Development)
Malpractice Insurance	.035	Medicare "weighted" specialty average premium for $100,000/$300,000 of mature claims-made coverage (HCFA Survey of Malpractice Insurers)
The following components can be treated as relatively constant across all MSAs and rural areas when compared to the other GMEI components (no price data required):		
Medical Supplies	.046	
Medical Equipment	.025	
Automobile	.018	
"Other" Expenses	.053	

VI. RESULTS

This chapter brings together the preceding analyses in this report and computes actual values for a basic GMEI and a number of possible options. The basic GMEI uses cost shares estimated from the AMA data and the price proxy data summarized in the table at the end of Chapter V. The results are presented in four sections. First, we discuss general patterns for each proxy and the basic GMEI. Second, we review apparent anomalies in the data and comment on values for specific MSAs and rural areas. Third, we develop several alternative GMEIs and contrast them with the basic index. Finally, the impact of developing specialty-specific indices is considered.

A. General Patterns

Table VI-1 presents a set of descriptive statistics for each of the price proxies and our basic GMEI. To provide a sense of the dispersion in the data, we show selected percentiles and the standard deviations, both weighted by area population, as well as and the maximum and minimum values. Recall that the Laspeyres structure described in Chapter II requires that each price enter the index normalized relative to the base price. All price proxy data presented here have been normalized relative to a population-weighted national average price.

The data show that malpractice premiums vary the most across geographic areas. Physicians in the state with the highest premiums—New York—pay over seven times more for a $100,000/$300,000 mature claims-made policy than do physicians in the state with the lowest premium—Arkansas. Clearly, if the malpractice cost share were large, this degree of dispersion would imply large differences in the GMEI. Malpractice, though, has a cost share of only .035.

Table VI-1

Input Price Proxies: Percentiles and Standard Deviation

(1.00 = U.S. average)

	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
Percentiles					
Maximum	1.73	1.47	1.79	2.11	1.49
90th	1.28	1.18	1.39	1.65	1.20
75th	1.12	1.07	1.13	1.34	1.10
50th	1.01	0.99	0.96	0.90	1.00
25th	0.86	0.91	0.82	0.62	0.88
10th	0.78	0.85	0.73	0.48	0.82
Minimum	0.54	0.73	0.62	0.27	0.71
Standard Deviation	0.19	0.14	0.25	0.61	0.16

Note: Both the percentiles and standard deviations are weighted by population.

The next most variable proxy is for office rents (cost share = 0.104). Its standard deviation is one third of that of malpractice premiums.

Both of the proxies for labor inputs vary less than those for the nonlabor inputs. However, there is clearly more dispersion in the proxy for physicians' own time (cost share = 0.574) than in the proxy for employee wages (cost share = 0.145). Using the range from the 10th to 90th percentiles as the measure of dispersion, we found that the physician proxy has a range of 0.50 as compared to 0.33 for employees. This suggests that there may be greater heterogeneity across areas in professional workers than in workers used in the employee proxy or, simply, that the physician proxy is measured with less precision due to small sample size. Both of these issues are revisited below.

Given the relative cost shares, it is not surprising that the dispersion in the basic GMEI tracks the wage proxies more closely than the nonwage proxies. However, the variability in the GMEI is even less than might be expected from the four proxies shown, because of the three national inputs—equipment, supplies, and "other"—that do not vary across areas. The effect of these inputs is to move the index closer to 1.0 in all areas.

To further explore how the proxies and the index vary across areas, we examined mean values of each variable by area type. Table VI-2 shows the results of this analysis for the four census regions, urban and rural areas, and MSAs of various sizes. (The regional results are presented for interested readers but will not be discussed.)

The urban/rural comparisons show that input prices, as measured by the GMEI, are about 21 percentage points higher in urban than in rural areas, largely due to the fact that urban professionals earn about 25 percentage points more than their rural counterparts. Employees wages are only 17 percentage points higher in urban areas. These two figures conflict with our belief that professionals' preferences for urban amenities (or distaste for

Table VI-2

Input Price Proxies and HCFA Hospital Wage Index by Metropolitan Area Population and Region

(1.00 = U.S. average)

	Physicians' Own Time	Employee Wages	Office Rent	Mal-practice Insurance	GMEI	HCFA Wage
METROPOLITAN AREA POPULATION						
Urban	1.06	1.04	1.07	1.08	1.05	1.06
3+ million	1.17	1.15	1.20	1.46	1.16	1.19
1–3 million	1.09	1.06	1.13	1.06	1.08	1.09
.5–1 million	1.01	0.99	0.99	0.89	1.00	0.98
.25–.5 million	0.99	0.98	0.99	0.97	0.99	0.98
< .25 million	0.94	0.94	0.92	0.83	0.94	0.93
Rural	0.81	0.87	0.77	0.77	0.84	0.82
REGION						
Northeast	1.05	1.05	1.09	1.40	1.06	1.06
North Central	0.98	1.01	0.91	0.87	0.97	0.99
South	0.92	0.92	0.88	0.67	0.92	0.88
West	1.12	1.07	1.21	1.31	1.11	1.15

Note: These means are weighted averages across GMEI areas. The weights are the 1980 population.

rural area attributes) would have led to compensation arrangements that produced smaller urban/rural earnings differentials than would exist for less-educated workers, given that both types of workers face similar costs-of-living. The larger differential for professionals may result from urban professionals representing a very different occupational mix from rural professionals.

The MSA size results tend to confirm the reasonableness of the relationship among several price proxies. Spatial economics predicts that as metropolitan areas increase in population density, land becomes scarcer and rents rise. However, as Chapter IV argues, workers accept wages that do not fully offset these living cost differences in order to have access to the amenities that tend to be available in big cities. The data show clear gradients in the rent and wage proxies across MSA population size groups. For both categories of workers, the rent gradient is steeper than the wage gradient, as expected.

The data show that physicians in MSAs below 1 million population, the majority of areas, face overall input prices that are not above the national average. However, prices rise quickly with MSA size. The biggest cities have practice input prices 16 percent above the national average. Another noteworthy finding is that rural physicians face prices that are 10 percentage points below even those in the smallest MSAs. This suggests that urban/rural GMEI differences are not solely due to the big-city effects. It also indicates that physician fees based solely on this GMEI would result in lower payments in rural areas than even in the smallest MSA. HCFA needs to be aware of this in light of Congressional concerns about the potential for this type of index exacerbating maldistribution problems.

In order to provide the full set of price proxy data that were used for each MSA and state rural area, a detailed tabulation is presented in Appendix A1. Appendix A2 contains price proxy and GMEI values for each of the 243 pricing localities, as derived from the MSA-to-locality mapping discussed in

Chapter II). Many readers will, no doubt, be interested in specific cases. We will not, however, discuss these in great detail in the text. A subset of these data are displayed in Table VI-3 for the 20 most populous MSAs (based on 1980 population). Even among the largest MSAs, the GMEI indicates a fairly wide range of input prices. Though most are above the national average, the GMEI for Atlanta is 7.3 percent below average. At the other extreme is Nassau-Suffolk at 28.2 percent above average. Nassau-Suffolk is costly as a result of having high prices for each of the individual proxies. The only MSA in which all input proxies are uniformly below national averages is Dallas, with the second lowest GMEI in this group.

B. Anomalies in the Index

Despite the general plausibility of each price proxy and the basic GMEI, there are areas where the index may be transmitting an erroneous picture. By its very nature, this project has no formal yardsticks against which to measure each area's GMEI value. However, it should be possible to identify apparent anomalies based on prior expectations about relative costs across areas. For example, if the GMEI value for the New York City MSA were lower than the one for rural New York state, there would be reason to suspect measurement problems with one or more of the underlying price proxies.

This section highlights general and specific problems with the data used in this index. It is clearly not possible to validate every datum used in this project on a case-by-case basis. Areas have been ranked according to their values for the basic GMEI (Appendix B) to help uncover anomalies in the overall index. These rankings are used to further explore specific price proxies.

Appendix B shows that the MSA with most expensive inputs for physicians (outside of Alaska) is Kokomo, Indiana, with prices almost 40 percent above the national average. This certainly would not have been expected. Not surprisingly, this extreme GMEI value results from an extreme value for the

Table VI-3

Input Price Proxies for the 20 Most Populous MSAs

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
5600	NEW YORK, NY	1.121	1.202	1.111	2.109	1.149
4480	LOS ANGELES-LONG BEACH, CA	1.281	1.152	1.389	1.649	1.246
1600	CHICAGO, IL	1.072	1.142	1.204	1.341	1.095
6160	PHILADELPHIA, PA-NJ	1.089	1.056	1.035	1.076	1.065
2160	DETROIT, MI	1.285	1.205	0.943	1.253	1.196
1123	BOSTON-LOWELL-BROCKTON-LAWRENCE	1.047	1.065	1.490	0.947	1.085
8840	WASHINGTON, DC-MD-VA	1.344	1.176	1.254	1.004	1.250
3360	HOUSTON, TX	1.117	1.072	0.943	0.475	1.053
5380	NASSAU-SUFFOLK, NY	1.293	1.175	1.475	2.109	1.282
6280	PITTSBURGH, PA	1.027	1.006	0.943	1.076	1.013
720	BALTIMORE, MD	1.138	1.060	1.094	0.781	1.090
520	ATLANTA, GA	0.885	1.007	1.035	0.670	0.927
5120	MINNEAPOLIS-ST PAUL, MN-WI	1.104	1.038	1.128	0.755	1.070
1920	DALLAS, TX	0.986	0.982	0.968	0.475	0.968
360	ANAHEIM-SANTA ANA, CA	1.305	1.158	1.551	1.649	1.278
1680	CLEVELAND, OH	1.115	1.057	0.953	0.623	1.056
5640	NEWARK, NJ	1.255	1.112	1.167	1.138	1.185
7320	SAN DIEGO, CA	1.197	1.021	1.271	1.649	1.167
7040	ST LOUIS, MO-IL	1.100	0.996	0.934	0.714	1.040
5775	OAKLAND, CA	1.172	1.214	1.522	1.649	1.207

Note: MSA population rankings are based on 1980 populations.

physicians' own time price proxy. The value of this proxy in Kokomo is 1.73, the highest in the nation. This apparent mistake may be due to a small sample size in the underlying professional hourly earnings data. The 1 percent sample has only 9 professional workers with at least 4 years of college in this MSA.

Nine other areas have a physicians' own time proxy based on fewer than 10 professionals' earnings. In addition, approximately 15 percent of the areas have proxies based on samples smaller than 25. Errors due to small sample size can lead to low values as often as high values. For instance, the least costly MSA, Ocala, Florida, has a physician proxy based on only one professional worker. Such anomalies for small MSAs are symptoms of a problem that we had anticipated when work with the 1 percent sample was undertaken. Most of the sample size problems should be solved when the 20 percent sample is used, as we recommend. However, some of the small MSA problems may be due to occupation-mix differences or intra-occupation heterogeneity that could remain in the 20 percent data. For now, data from these MSAs should be used with caution.

Not all anomalies appear as extreme values. One such anomaly occurs in the New York City area. The GMEI value for the New York City MSA is 1.15. Four MSAs that comprise a large part of the New York suburbs (Nassau-Suffolk, New Jersey; Vineland-Millville-Bridgeton, New Jersey; Monmouth-Ocean, New Jersey; and Newark, New Jersey) have higher index values due to the physician proxy. The reason is that the 1 percent sample categorized workers by place of residence, not place of work. The data are consistent with the fact that well-paid professionals working in the city often live in Nassau-Suffolk and other suburban MSAs. Since the index will be applied to fees based on the location of the physician's office, the price proxy should be based on workers' place of work instead of place of residence. This modification will be possible with the 20 percent sample.

Unexpected values may arise in proxies with relatively low cost shares and have little effect on the GMEI. Such problems are less important but nonetheless noteworthy, because they are potential areas of criticism for the GMEI.

The New York MSA value of the office rent proxy provides an example of a problem in a proxy with a low cost share. New York City is generally perceived as having high rents, particularly inside the city. However, HUD fair market rent for housing puts the New York MSA at only 11 percent above the national average. San Francisco and Boston, two other notoriously high rent cities, are 67 percent and 49 percent above the national average, respectively. Since the rental data reflect the 45th percentile of residential rents, New York's reputation may be based on a single extreme segment of the market, e.g., Manhattan around Central Park, or due to bimodality in the rent distribution. The bimodality argument suggests that the measure of fair market rent is dominated by the lower part of the market but that a substantial proportion of the market is much more expensive. Such a division could exist in the New York market as a result of long-term rent control and stabilization policies. Whether or not such policies should lead to adjustments in the price proxy (for New York or other areas) is a question warranting further investigation.

The above set of anomalies are intended to be illustrative of potential problems. We expect more of these to be identified as a broader audience reviews this report.

C. Alternative Indices

The preceding analyses in this report suggests that the basic GMEI discussed above represents the most appropriate combination of cost shares and price proxies. However, considering alternative indices can serve two basic purposes. First, they allow us to determine how sensitive the basic GMEI may be to changes in some critical choices about data sources. Second, they enable us to explore how specific policy decisions may alter the input price index. For instance, if HCFA decided to pass-through the costs of physicians' own time, would that radically alter relative input prices across areas?

This section considers four alternative indices that differ from the basic GMEI in the following ways: (1) the AMA cost shares are replaced by shares based on NORC data; (2) for the physician proxy, managers and professionals replace professionals; (3) an index excluding physicians' own time is computed; and (4) a floor is imposed on the physician proxy based on the average in small MSAs. The first alternative tests the sensitivity of the GMEI to the choice of cost share data. The second alternative is developed as a possible means for dealing with anomalies arising from the small samples of professional workers in the 1 percent sample in some areas. The third modification produces an index that could be used in the pass-through option discussed in Chapter IV. The fourth demonstrates how the GMEI would change if HCFA truncated the physician proxy so as to not exacerbate maldistribution problems. Comparisons between the basic GMEI and these alternatives, on the basis of area population and region, are shown in Tables VI-4 and VI-5.

Turning to Table VI-4, we find that the first three alternatives all exhibit patterns similar to the basic GMEI. The index with the NORC cost shares implies virtually no change in the index. Despite shifts in the relative importance of physician, employee, and rent components resulting from the change in cost shares, the pairwise correlations between these proxies are quite high. The extent to which two proxies are correlated, an increase in one proxy's cost share at the expense of the other has no impact on the index. The (weighted) pairwise correlations are .84 for physicians and employees, .74 for physicians and rent, and .76 for employees and rent. Although AMA and NORC cost shares differ in terms of physicians, employees, and rent, these are

Table VI-4

Means of Alternative GMEIs by Metropolitan Area Population and Region

(1.00 = U.S. average)

	Basic GMEI	NORC Weights	Managerial & Professional Physician Proxy	Pass-through
METROPOLITAN AREA POPULATION				
Urban	1.05	1.05	1.05	1.04
3+ million	1.16	1.16	1.14	1.14
1-3 million	1.08	1.08	1.07	1.06
.5-1 million	1.00	1.00	1.00	0.98
.25-.5 million	0.99	0.99	0.99	0.99
< .25 million	0.94	0.94	0.94	0.94
Rural	0.84	0.85	0.85	0.88
REGION				
Northeast	1.06	1.06	1.06	1.07
North Central	0.97	0.98	0.99	0.97
South	0.92	0.92	0.93	0.92
West	1.11	1.11	1.08	1.10

Note: These means are weighted averages across GMEI areas. The weights are the 1980 population.

highly correlated. The result is that the choice of cost shares has little impact on the index values.

When the managerial and professional specialty price proxy is used for the physicians' own time component, we find a small reduction in the index's dispersion across areas, with the most populous MSAs coming down and the rural areas increasing. Our earlier analysis of this proxy indicated that it has less variance than the one based on only professional specialty occupations, so that its effect on the GMEI is not surprising. The index based only on nonphysician inputs, i.e., the pass-through GMEI, varies the least of three options shown in Table VI-4, suggesting that the physician proxy does contribute somewhat to the urban/rural disparity in practice costs as measured by the GMEI. Whether either the pass-through policy or one using the basic GMEI would lead to more equity in payment rates than presently exists depends on the relationship between current Medicare changes and the physician proxy across areas.

Table VI-5 presents a comparison of indices in which the proxy for physicians' own time is used in both its original form and with a floor. With a floor policy, physicians in no areas of the country would be compensated for the costs of their own time at a rate below a certain level. In this case, we set the level at the average earnings for professionals in MSAs with less than 250,000 residents. Other floors could be chosen. One technical reason for pursuing this is that the available data show that earnings of professionals fall much more sharply in rural areas than the earnings of employees. This might be the result of a less uniform occupation mix among professionals than other workers (e.g., teachers may be relatively more important in rural areas).

Specifically, whenever the proxy of a MSA and rural area of a state was less than .937, the mean for the smallest MSAs, it was set equal to .937. The mean of this modified proxy is 1.044. To keep the weighted national average of

Table VI-5

Means of GMEI and Physician Price Proxy by Metropolitan Area Population and Region: With and Without a Floor on the Physicians Price Proxy

(1.00 = U.S. Average)

	Physicians' Own Time Price Proxy		GMEI	
	Basic	With Floor*	Basic	With Floor*
METROPOLITAN AREA POPULATION				
Urban	1.06	1.03	1.05	1.03
3+ million	1.17	1.12	1.16	1.13
1-3 million	1.09	1.05	1.08	1.05
.5-1 million	1.01	0.98	1.00	0.98
.25-.5 million	0.99	0.97	0.99	0.98
< .25 million	0.94	0.96	0.94	0.95
Rural	0.81	0.90	0.84	0.89
REGION				
Northeast	1.05	1.03	1.06	1.05
North Central	0.98	0.98	0.97	0.98
South	0.92	0.95	0.92	0.94
West	1.12	1.08	1.11	1.09

Note: These means are weighted averages across GMEI areas. The weights are the 1980 population.

*Based on the proxy for physicians' own time having a floor set at 0.937 prior to being re-normalized.

the proxy equal to 1.0, the modified proxy was divided by this mean; that is, it was renormalized. The net effect is to lower the proxy in the largest MSAs from 1.17 to 1.12 and to raise it from .81 to .90 in rural areas. It raises the proxy in the smallest MSAs from .94 to .96, because roughly half of these MSAs are below the mean and are increased to it. The net effect on the GMEI is to compress its range. The GMEI in rural areas is 5 percentage points higher, while its value in urban areas is 2 percentage points lower. The reduction that occurs in all MSAs with proxy values above the floor changes their GMEI values relative to the national average but not relative to each other.

Another way to evaluate these alternatives is to consider the extent to which each area's new index would differ from the basic GMEI. This can be measured by the percentage difference between the alternative index and the basic GMEI. The weighted average and selected percentiles of this statistic are shown in Table VI-6 for three alternatives. It is not computed for the pass-through GMEI because this alternative would be applied to less than one-half of a physician fee. Using cost shares based on AMA or NORC data does not have much impact on the GMEI. The index changes by less than 2 percent for most areas. The weighted average absolute percent difference is only 0.60 percent.

Replacing the physician price proxy based on professionals with one based on managers and professionals yields a larger weighted average absolute difference, namely 2.52 percent. In addition, the distribution is quite different than the one observed for the shift from AMA to NORC weights. Five percent of the areas experience increase in the GMEI of over 7.8 percent. Twenty-five percent of the area GMEIs fall by more than 2.3 percent. This highlights the influence of the choice of the physician proxy.

Using a floor on the professional earnings price proxy also implies substantial changes in the GMEI for many areas. Five percent would increase

Table VI-6

Percent Difference Between Selected Alternatives and Basic GMEI

Percent Difference Between Alternative and Basic GMEI	NORC Weights	Managerial & Professional Physician Proxy	Floor GMEI
Percentiles			
95th	1.42%	7.85%	12.55%
75th	0.60	2.67	3.93
50th	0.20	0.12	-2.36
25th	-0.25	-2.33	-2.48
5th	-0.95	-6.08	-2.62
Average Absolute Percent Difference[a]	0.60	2.52	3.78

[a] Weighted by population.

their index values by at least 12.5 percent if the floor we considered were imposed. However, because of the large number of MSAs whose index value is reduced when the proxy is renormalized, the median (50 percent) percent differences between the floor GMEI and the basic index would be -2.35 percent relative to the national average. Table VI-6 indicates that changes in the physician price proxy will have a much greater effect on the GMEI than changes in the cost shares.

D. Specialty-Specific Indices

Physician specialties produce different outputs requiring different input combinations. The geographical relative prices of these different input combinations will not be identical unless all input prices are perfectly correlated across areas. Thus, a geographic practice cost index defined for a particular specialty's input combination will differ from the all-specialty index.

Specialty cost shares reflect varying input combinations. In Chapter III, we found statistically significant cost share differences among all specialties. Furthermore, as described in Chapter V, we have constructed specialty-specific employee wage and malpractice price proxies to reflect the varying occupational mix of physician employees and specialty differences in malpractice risk class. Specialty-specific GMEIs are defined by combining specialty cost shares with the corresponding specialty employee wage and malpractice price proxies,[7] and the other price proxies, which do not vary by specialty.

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[7] Malpractice price proxies were calculated only for general practitioners, general surgeons, and orthopedic surgeons. For other specialties, one of these proxies was assigned based on risk class.

Table VI-7 presents results on the absolute value of differences between specialty-specific GMEI and all-specialty GMEI values for the GMEI areas. We used the NORC cost shares for both the all-specialty and specialty-specific GMEIs, since AMA shares are unavailable for an exhaustive specialty decomposition. The specialty GMEIs differ little from the all-specialty or NORC GMEI. The population-weighted average absolute percentage deviation of the specialty GMEIs from the all-specialty GMEI is less than 2.5 percent for each specialty. For 14 of the 17 specialties, including all medical and surgical specialties, 95 percent or more of areas have specialty-specific values within 3.2 percent of the all-specialty values.

As expected from the cost share analysis in Chapter III and the employee occupation mix findings in Chapter V, the anesthesiologist and psychiatrist GMEIs differ the most from the all-specialty index. For 10 percent of areas (not necessarily the same areas for each specialty), the anesthesiologist GMEI differs from the all-specialty index by 5.1 percent or more, and the psychiatrist index differs from the all-specialty index by 4.5 percent or more. Consideration of GMEIs specific to these specialties may be warranted, but for most areas the all-specialty GMEI would provide accurate values even for them.

The application of specialty-specific GMEIs, while conceptually justified, would result in few practical differences from the use of a single, all-specialty GMEI. Given the administrative burden of specialty-specific indices, HCFA is justified in considering, certainly for the interim GMEI, a single index without specialty differentiation.

Table VI-7

Specialty-Specific GMEIs versus the GMEI with NORC Weights

Specialty	Average Absolute Percent Difference from GMEI with NORC Weights[a]	Percentiles of Absolute Differences				
		5	25	50	75	95
General Practitioner	0.5%	0.0%	0.2%	0.5%	0.9%	1.3%
Family Practitioner	0.6	0.0	0.3	0.6	1.0	1.8
Internist	0.6	0.0	0.2	0.5	0.8	1.4
Cardiovascular Disease	0.6	0.0	0.2	0.5	1.0	1.6
Pediatrian	0.5	0.0	0.2	0.4	0.7	1.5
Other Medical	0.8	0.1	0.4	0.7	1.2	1.9
General Surgeon	1.0	0.1	0.6	1.0	1.4	1.9
Orthopedic Surgeon	1.3	0.1	0.4	1.0	1.5	3.1
Ophthalmologist	1.1	0.1	0.4	1.0	1.6	2.5
Urologic Surgeon	0.4	0.0	0.1	0.3	0.5	1.0
OB/GYN	1.3	0.1	0.5	0.9	1.4	2.5
Other Surgeon	1.5	0.1	0.6	1.2	1.7	2.7
Psychiatrist	2.0	0.2	1.0	1.8	3.0	5.3
Anesthesiologist	2.4	0.3	1.1	2.2	3.6	6.1
Pathologist	1.4	0.1	0.6	1.3	2.2	4.2
Radiologist	0.8	0.1	0.4	0.8	1.3	2.5
Other Specialist	1.1	0.1	0.5	1.1	1.8	3.2

[a] Weighted by population.

VII. SUMMARY AND FURTHER REFINEMENTS

This chapter summarizes the issues that were addressed and reviews the analyses that were undertaken in the development of the GMEI. In addition, we outline the further refinements that should be undertaken. We conclude by laying out what we believe to be the key decision that HCFA must make in developing an interim geographic index of physician practice costs before it is used in a physician payment system.

A. Summary

Developing an interim GMEI required choices about the technical structure of the index, the definition of geographic areas for which the index would be computed, and the applicability of available data sources. To develop the interim GMEI within six months, it was essential for us to draw on existing theory, policy instruments, and data whenever possible. With this in mind, deciding on the technical structure of the interim GMEI was fairly straightforward. We chose to adopt a Laspeyres input price index that included prices for physicians' own time, employee wages, office rents, malpractice insurance, medical supplies, medical equipment, and miscellaneous other expenses. In a Laspeyres index, the cost of a market basket of goods (in this case, inputs) is compared across areas. The index captures only geographic differences in input prices, so it is not biased by geographic differences in the types of services physicians provide. HCFA has been using this basic structure since 1975 to monitor the national rate of increase in practice costs through the Medicare Economic Index (MEI).

The major criticism of a Laspeyres index is that it does not allow for substitution within the market basket in response to changes in relative prices. Since physicians tend to move away from higher cost inputs, by not allowing for substitution a Laspeyres index overstates variation in the actual costs of practice. While this is a clear theoretical concern, the broad definition of the input categories and a number of studies reviewed for this project, including one on the MEI, suggest that substitution bias does not appear to be a serious empirical issue.

The choice of GMEI areas was less straightforward but, nonetheless, again we were able to draw on a current HCFA payment methodology. The areas for a physician geographic input price index should satisfy two criteria: (1) homogeneity in input prices, so that there is more inter- than intra-area variation in costs; and (2) large enough geographically so that the areas are self-contained markets to minimize border-crossing. Unfortunately, these are conflicting goals. The first criterion suggests very small areas (e.g., counties or zip codes), the latter very large ones (e.g., states or census divisions).

The middle ground to break this conceptual stalemate is the Metropolitan Statistical Area (MSA)—aggregations of adjacent counties with close economic and social ties. The MSA is large enough to eliminate most border-crossing and yet is a single market, so prices tend to vary little. Using the MSA required special treatment for non-MSA areas. Our approach grouped these non-MSA areas into county aggregates on a state-by-state basis. This basic MSA/non-MSA pattern is used for the area wage index (another input price index) employed in the prospective payment system for hospitals (PPS), creating a policy precedent for its use here.

The remaining components needed for the computation of a GMEI were two types of data: (1) area-specific input price data (or price proxy data) for each of the practice cost components to be explicitly included in the index;

and (2) data on the cost shares that serve as the weights in the Laspeyres index. Since the cost shares can be computed as the proportion of total practice revenues expended for each input, a detailed survey of practice characteristics provides a viable source of the second type of data. Two such surveys were available. One is the HCFA/NORC Physicians' Practice Costs and Income Survey; the other is the AMA Socioeconomic Monitoring System. Both are telephone surveys of physicians that collect data on hours worked, utilization patterns, fees, practice personnel, expenses, and incomes. We concluded that the AMA data that can be annually updated provided a somewhat more consistent set of cost shares. However, it is clear that usable cost shares can be derived from either source. At this time, it was necessary to use the NORC data in order to explore specialty-specific costs shares.

The potential sources of input price data were considerably less rich. With the exception of malpractice insurance, only proxy data could be found. Malpractice insurance premiums were derived from a comprehensive set of insurer rate sheets collected by HCFA's Survey of Insurers for use in the MEI calculation. A proxy for office rents was taken from the Department of Housing and Urban Development Fair Market Rent series used in the computation of rental subsidies. Although these data measure area differentials in housing costs as opposed to office costs, the policy precedent for using housing as a proxy for office rent was established when the housing component of the CPI was chosen as the price proxy for office rents in the MEI. Price proxies for the remaining nonlabor inputs—supplies, equipment, and "other"—were unavailable. Since area variations in these prices are probably less than those found in the other input prices, we treated these factors as national inputs for the purposes of developing an interim index.

Price proxies for the labor inputs—physician and nonphysician—were developed from the 1 percent public use sample of the 1980 Census of Population and Housing. Although these data may not be as current as other cross-sectional wage information, they are the most complete in terms of both occupational and area coverage. For the nonphysician labor inputs price proxies were computed from earnings of administrative support personnel, health technologists and technicians, and registered nurses. We controlled for area variations in hours worked.

Although physician earnings data are available from the Census, it would have been inappropriate to use these data to adjust geographically skewed fees because these fees are, in large part, the determinants of the earnings patterns. As an alternative, we used hourly earnings of workers in the professional specialty occupations with four or more years of college to derive a proxy for the physician earnings component of the GMEI. Since this component has the largest weight and is the only input for which there are no readily observed market prices, we closely evaluated the choice of this price proxy. It appeared that modifications in the occupational group would alter the geographic variation in the proxy, but that the education cutoff (used to obtain workers who might have preferences more similar to those of physicians) made little difference.

Once the cost share and price proxy data were chosen, we computed a number of alternative GMEIs. We began with a basic index containing those data that we viewed as the most appropriate. The effect of altering several index components was simulated. We explored indices using NORC cost share data, using a physician price proxy based on a broader occupational classification, and indices which were specialty-specific. We also considered an index that excluded the physician component, as well as an index that established a floor on the value of the physician proxy price. These analyses allowed us to assess the relative importance of the critical data decisions made in this project.

On average, the basic GMEI exhibited reasonable patterns. Practice input prices were substantially higher in urban than in rural areas and increased with MSA population size. Not surprisingly, the major anomalies in the index were the result of unexpected values in the physician proxy. Most of these arose in small MSAs where the professional earnings data from the 1 percent sample are likely to be subject to the most random errors or occupational mix patterns. The simulations of alternative GMEIs showed that the index is not sensitive to the choice of cost share data, but is sensitive to changes in the physician proxy.

B. Future Refinements and Analyses

This section discusses refinements of both the methodology and the evaluation of the resulting values.

20 percent sample: The foremost advantage of the 20 percent sample is a large increase in the sample size, which will substantially increase our precision in small MSAs and rural areas. This will improve the proxies for physicians' own time and nonphysician employee wages. It will also allow us to calculate these proxies for new MSAs and for Puerto Rico MSAs.

Another major refinement is calculating earnings by place of work instead of place of residence. Price proxy values for New York City and its suburbs, where this refinement will probably have the largest impact, suggests that this improvement is more important for professionals than for the occupations employed by physicians. The 20 percent sample should correct two sets of anomalies, those in areas with small sample size and those in the greater New York area.

Although the Census data on earnings is limited to certain occupational groups, occupational mix can be better controlled for. The median for professional earnings for a particular MSA or rural area may be too high, for instance, because certain occupational groups with high earnings nationally make up a higher than average proportion of professionals in the area. To solve this problem, median earnings can be calculated for each occupational group for each area and these medians can be summed (weighted by the national proportion of each occupational group). Then differences in the mix of occupational groups across areas would not be reflected in the index. The 20 percent sample will also provide a more detailed occupational decomposition for use in the employee wage proxy.

Finally, the physician proxy could be based only on workers with some post-graduate training. Using the 20 percent sample, we could be more selective in terms of educational level without having a sample size that is too small. We found that including only workers with 4 years of college had virtually no impact on the physician proxy. This suggests that including only workers with post-graduate training may have little impact. However, the proxy group would be conceptually more defensible.

Updating data: The data for the price proxies should be updated. (In addition, if AMA data are used for the cost shares, the most recent data should be used.) In the case of malpractice premiums, the next later year of data could be used. In the case of rents, HUD annually updates the data. In the cases of both physicians and employees, the proxies are based on census data collected in 1979 and new data will not be available until about 1992. While it is unlikely that relative wages have changed rapidly in many areas, some change has undoubtedly occurred since 1979. It should be recognized that update factors will not be as geographically or occupationally precise as the Census data itself.

The physician's own time proxy can be updated using earnings data from the Current Population Survey (CPS). As discussed in Chapter IV, CPS has the same type of data as the 1980 Census. The advantage of Census is its large sample size, and the advantage of CPS is its currency. The ratio of earnings from the latest CPS and earnings from the Census could be calculated for each region and for each MSA size (or for rural areas). The product of this update factor and earnings for each MSA and rural area would yield an updated price proxy.

The BLS Area Wage Surveys have annual inflation factors for office clerical workers for the four Census regions and currently about 150 MSAs and other areas. This data can be used to update the clerical wage, which is two-thirds of the employee wage proxy. MSA-specific values can be used where they exist, and for other areas regional values could be applied.

The Area Wage Survey can also be used for medical wages. (The only alternative source appears to be the BLS triannual survey of hospitals. This includes RNs, LPNs, and medical technicians but data is collected for only 23 large MSAs.) The Area Wage Survey reports annual rates of change in the wages of "registered industrial nurses" for the four regions and selected MSAs. Although not a precise occupational match for the employee categories (RNs, LPNs, and medical technicians), these wage data could reasonably be used as update factors for medical wages. Although imperfect, data from the Area Wage Survey should capture any major wage movements across regions or large MSAs.

Prevailing charges: Chapter VI analyzed the impact of alternative GMEIs but did not compare any of the GMEIs to prevailing charges. The impact of the GMEI on Medicare payments to physicians will depend, in part, on the relationship between the index and prevailing charges. At present, the two variables are based on different geographical units: prevailing charges pertain to localities and the GMEI, to MSAs and rural areas of states. If the GMEI is to be applied in terms of localities, its values for MSAs and rural areas must be translated into localities. If it is to applied in terms of MSAs and rural areas, prevailing charges must be translated into those units. These translations can be made, albeit imperfectly, as discussed in Chapter II.

Although there is only one index value per geographical unit, there are several hundred prevailing charges. The GMEI can be compared either to prevailing charges for a number of common procedures or to some index of charges. If geographic variation in prevailing charges is highly correlated for most common procedures, comparison of the GMEI to an index of prevailing charges will provide a good idea of the effect of applying the GMEI to the prevailing charges of most procedures. Since many localities lack prevailing charges for many procedures, creating an all-inclusion mean is problematic. However, a usable mean could be designed, taking into account the frequency of a procedure and the proportion of localities with a charge for that procedure.

C. Choices Facing HCFA

Before a single interim GMEI (or a set of specialty-specific GMEIs) can emerge from this project for use in a physician payment policy, a number of specific decision will need to be made by HCFA. This section reviews these choices and evaluates the available evidence that may provide guidance in each area. We assume that the basic structure of a Laspeyres input price index will be maintained because it is both conceptually acceptable and computationally straightforward. Beyond this, all of the decisions made in this report could be revisited. However, some may be more crucial than others.

The GMEI could be defined in terms of geographic units other than MSAs and state rural areas. HCFA may feel that the index must be based on the pricing localities. However, since the pricing localities are not defined uniformly across carriers and since no data can provide a consistent set of price proxies at the locality level, this may simply not be feasible. In addition, the localities cannot be viewed as reasonably self-contained and homogeneous input markets in the same way that MSAs can.

On the issue of the data used to construct the GMEI cost shares, HCFA could choose to favor the NORC data over the AMA data. Given the fact that AMA data was not made available in time to carry out the specialty-specific phase of the cost share analysis, it may be seen as an unreliable source. In addition, AMA data may be less desirable for public policy because it is an industry source. On technical grounds, the AMA data seemed to produce a more consistent set of cost shares than unedited NORC data. However, with some reasonable edits of NORC based on published AMA sources, NORC cost shares produced a GMEI that was virtually identical to the one using AMA cost shares. Either source could be used for the GMEI cost shares.

The search for input price proxy data indicated that no data, credible or otherwise, could be found for medical equipment, medical supplies, or "other" expenses. Given the nature of these inputs (especially equipment and supplies), we chose to assume that these inputs were sold in national markets and, as such, were not likely to vary geographically. No price variation was allowed in these components. This tends to bias the GMEI toward 1.0 in all areas. If HCFA is uncomfortable with this approach, it could alter our assumption. For example, HCFA might want to allow for geographic variation in these prices that parallel one of the other inputs or groups of inputs.

Otherwise, new data collection efforts that would yield price proxy data for these inputs would need to be considered.

The major area that HCFA must focus on in constructing the GMEI is the physicians' own time price proxy. Its cost share of nearly 60 percent indicates that this component tends to dominate the GMEI. The most basic decision is whether to use a proxy based on an area cost-of-living or incomes data. There are two strong reasons for choosing an income-based approach. First, even if HCFA wanted to compensate physicians for inter-area cost-of-living differences, there are no comprehensive and reliable data sources available. The geographically most comprehensive index is based on data collected on a voluntary basis and lacks data for Chicago and rural areas. Second, using cost-of-living data would tend to overcompensate people in high cost areas, which tend to also have many amenities. What little data that is available (from ACCRA) indicates that incomes do systematically vary less across areas than cost of living. We, therefore, recommend the income-based approach for the physician price proxy.

The best data source to use in developing an income-based price proxy appears to be the 1980 Census of Population and Housing. It allows for the computation of hourly earnings data for MSAs and rural areas for a large number of occupational groups. These hourly earnings data can form the basis for the price proxy. Since physician incomes are jointly determined with the fees the GMEI will be used to adjust, data on other occupational groups should be used in the proxy. This group should have preferences for geographic areas that are expected to be similar to those of physicians.

Our analysis led us to base the physician proxy on workers in professional specialty occupations with 4 or more years of college. Clearly, other choices are possible. HCFA might want to consider a broader occupational group, e.g., managerial and professional specialty occupations, that might be less susceptible to anomalies in particular areas. Movement in this direction would also expand the available sample sizes, a benefit that would be less important with the 20 percent sample. Alternatively, HCFA might want to focus on a more narrow set of selected occupations in order to strengthen arguments about comparability to physicians. This, however, would put a burden on policymakers in terms of defending included and excluded groups. Our approach to improving comparability to physicians was to focus on workers with at least 4 years of college. With the 20 percent sample, a higher education cut-off could be considered.

The GMEI is sensitive to these occupation group choices. When we simulated an index using the broader group, the GMEI value increased by at least 5.8 percent relative to the basic GMEI for one-tenth of the areas. This choice is, therefore, more critical than the choice of cost share data. Although the choice of a proxy group cannot be based on statistical analysis alone, the simulation in Chapter VI indicates that many areas' index values will be affected by this decision. However, analysis suggests that the education cutoff choice has little effect on the price proxy.

The other labor price proxy is also based on a weighted average of relevant occupations' earnings as reported in the 1980 Census. We did not use the HCFA Hospital Wage Index because the occupation mix in physicians' offices differs substantially from that found in hospitals. If HCFA viewed its wage index as a more defensible option, that data could easily be used in the GMEI. Given the high correlation between the census proxy we developed and the HCFA index, and the relatively low employee cost share (as compared to physicians' own time), using the HCFA index would not have a large effect on the GMEI. If anything, it would tend to increase the dispersion in GMEI values slightly.

The malpractice price proxy could be replaced by one based on "constant-risk" adjusted premiums. These data are presently being developed by another HCFA contractor. They would be more appropriate if the inter-area variation in the risk of malpractice suits were viewed to be independent of average physician behavior. Preliminary analyses of similarly adjusted data suggest that "constant-risk" premiums vary more than the "constant-coverage" premiums used in this report. This would increase GMEI dispersion, but probably not extensively in light of the low malpractice cost share. These data could have more of an effect in specialty-specific indices because the cost share would be higher in certain cases.

The office rent proxy, based on housing rents, is probably the area in which the least amount of discretion exists. There are no office rent data that could be used without great amounts of imputation. In addition, office rent data that are available do not appear to be representative of the areas from which they are drawn. To the extent that rent control in areas such as New York City distort the fair market rents for housing, some adjustments might be considered. As it presently exists, however, this price proxy seems plausible and probably can be used as is.

Once the component data elements have been selected, HCFA has several options regarding the type of GMEI it develops. The basic GMEI that we computed would apply to all physicians. HCFA might want to compute specialty-specific indices, since there is variation in both outputs and cost shares by specialty. While these might turn out to be politically important, for most areas and specialties they would have little effect. For each specialty, the population-weighted average deviation of its specialty GMEI from the basic GMEI is less than 2.5 percent.

Concerns about physician shortage areas might lead HCFA to establish a floor on the physician proxy. A technical reason for this policy is that professional earnings in rural areas are substantially below that in small MSAs, suggesting that the occupational group may not be homogeneous across areas. A floor would have a large effect on the GMEI in many areas, as would be intended. The floor we simulated, using the average proxy value in the smallest MSAs as a minimum, would lower the GMEI in one-half the areas by over 2 percent. For the 10 percent of the areas that would gain the most, the GMEI would increase by over 8 percent. Alternatively, HCFA might simply not adjust the physician component of fees and develop an index based only on nonphysician inputs. The impact of this pass-through GMEI would depend on the relationship between present prevailing changes and the physician proxy in the basic GMEI.

REFERENCES

Abe, M. A., "Hospital Reimbursement Schemes: Japan's Point System and the United States' Diagnosis-Related Groups," Medical Care, September 1985, Vol. 23, No. 9, pp. 1055-1066.

Abt Associates, "Improving the Definition of Hospital Labor Market Areas and Wage Indexes," report submitted to the Prospective Payment Assessment Commission, February 1987, Cambridge, MA.

Archibald, Robert B., "On the Theory of Industrial Price Measurement: Input Price Indexes" (Working Paper 48), Washington: Bureau of Labor Statistics, 1975.

Bellante, Don, "The North-South Differential and teh Migration of Labor," American Economic Review, Vol. 61, March 1979, pp. 166-175.

Berry, Robert M., "A Review of the Medicare Economic Index: An Analysis of Variations in Practice Costs Among Specialists," Health Care Financing Conference Proceedings: Issues in Physician Reimbursement, Baltimore: U.S. Department of Health and Human Services, 1986, HCFA Pub. No. 03121, pp. 3-29.

Boyer, R. and Savageau, Placed Rated Almanac, Chicago: Rand McNally, 1985.

Braithwait, S. D., "The Substitution Bias of the Laspeyres Price Index," American Economic Review, March 1980, Vol. 70, pp. 64-77.

Building Owners and Managers Association International: 1986 BOMA Experience Exchange Report, Washington: BOMA International, 1986.

Bureau of the Census: Detailed Population Characteristics Report, PC80-1-D, Washington: U.S. Government Printing Office, 1983.

Bureau of the Census: County Business Patterns 1984, Washington: U.S. Government Printing Office, 1986.

Bureau of Labor Statistics: Employment and Wages: Annual Averages 1985, Bulletin 2272, Washington: U.S. Government Printing Office, 1986.

Bureau of Labor Statistics: National Survey of Professional, Administrative, Technical, and Clerical Pay, March 1986, Bulletin 2271, Washington: U.S. Government Printing Office, 1986.

Burney, I. and Schieber G., "Medicare Physicians' Services: The Composition of Spending and Assignment Rates, Health Care Financing Review, Fall 1985, Vol. 7, pp. 81-96.

Carlino, Gerald A., "Do Regional Wages Differ?," Federal Reserve Bank of Philadelphia Publication, 1986.

Contandriopoulos, A. P. and Fournier, M. A., "Les Services Medicaux au Quebec" (research paper), University of Montreal, June 1983.

Cushman & Wakefield: Focus on Marketrends (annual report), New York, 1987.

Dutton, Benson L. Jr. and McMenamin, Peter, "The Medicare Economic Index: Its Background and Beginnings," Health Care Financing Review, September 1981, pp. 137-140.

Department of Housing and Urban Development, Rules. Low Income Housing: Housing Assistance Payments--Fair Market Rents for Existing Housing, Moderate Rehabilitation, Housing Voucher, etc. Federal Register, Vol. 51, No. 68, 1986, pp. 31013-31074.

Gerking, Shelby D. and Weirick, William N., "Compensating Differences in Interregional Wage Differentials," The Review of Economics and Statistics, Vol. 65, 1983, pp. 483-487.

Getz, Malcolm and Huang, Y.C., "Consumer Revealed Preference for Environmental Goods," Review of Economics and Statistics, Vol. 60, August 1978, pp. 449-458.

Gonzales, Martin L. and Emmons, David W., eds., Socioeconomic Characteristics of Medical Practice 1986, Chicago: American Medical Association, 1986.

Health Care Financing Administration, Notice. Medicare: Home Health Agency Costs per Visit; Schedule of Limits. Federal Register, Vol. 52, No. 129, 1987, pp. 25561-25574.

Health Care Financing Administration, Proposed Rule. Capital Payments Under the Inpatient Hospital Prospective Payment System. Federal Register, Vol. 52, No. 99, pp. 18849-18892.

Hellinger, Fred J., "Reimbursement Under Diagnosis-Related Groups: The Medicaid Experience," Health Care Financing Review, Winter 1986, Vol. 8, No. 2, pp. 35-44.

Institute of Real Estate Management of the National Association of Realtors: Income/Expense Analysis: Office Buildings, Chicago: Institute of Real Estate Management, 1986.

Roback, Jennifer, "Wages, Rents, and the Quality of Life," Journal of Political Economy, Vol. 90, No. 6, 1982, pp. 1257-1278.

RRC, Inc.: "Medical Malpractice Liability Insurance: A Closer Look" (report), Bryan, Texas: RRC, April 1986.

Schmitz, Robert J. and Merrell, Katherine, "Improving the Definition of Hospital Labor Market Areas and Wage Indexes" (Final Report), Cambridge: Abt Associates, 1987.

Sherwood, Mark, "Family Budgets and Geographic Differences in Price Levels," Monthly Labor Review, April 1975, pp. 8-15.

Smith, V. Kerry, "The Role of Site and Job Characteristics in Hedonic Wage Models," Journal of Urban Economics, Vol. 13, 1983, pp. 296-321.

Sprachmen, Susan; Rosenbach, Margo; Burich, Mary; et al., Physicians Practice Costs and Income Survey, Final Methodological Report, prepared under HCFA Contract No. 500-83-0025, December 1985.

Waldo, Daniel; Levit, Katherine; and Lazenby, Helen, "National Health Expenditures, 1985," Health Care Financing Review, Fall 1986, Vol. 8, No. 1, pp. 1-21.

Welch, W. P., "Medicare Payments to HMOs: Urban Core Versus Suburban Ring" (working paper), Washington: The Urban Institute, June 1987.

Wolfson, A. D., "Compensation of Physicians in Ontario" (research paper), University of Toronto, March 1982.

APPENDIX A1

Input Price Proxies by MSAs and Rural Areas of States: In Alphabetical Order

Appendix A1. Input Price Proxies

By MSAs and Rural Areas of States:

In Alphabetical Order

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
40	ABILENE, TX	0.843	0.856	0.907	0.475	0.861
80	AKRON, OH	1.143	1.047	0.914	0.623	1.067
120	ALBANY, GA	0.719	0.878	0.811	0.670	0.790
160	ALBANY-SCHENECTADY-TROY, NY	1.088	1.003	0.918	2.109	1.081
200	ALBUQUERQUE, NM	0.998	0.935	1.037	0.750	0.984
220	ALEXANDRIA, LA	0.767	0.878	0.791	0.747	0.818
240	ALLENTOWN-BETHLEHEM, PA-NJ	1.042	0.985	0.909	1.076	1.015
280	ALTOONA, PA	0.824	0.911	0.815	1.076	0.869
320	AMARILLO, TX	0.839	0.958	0.833	0.475	0.866
360	ANAHEIM-SANTA ANA,CA	1.305	1.158	1.551	1.649	1.278
380	ANCHORAGE, AK	1.521	1.466	1.510	1.124	1.424
400	ANDERSON, IN	0.966	0.928	0.793	0.515	0.932
405	ANDERSON, SC	0.739	0.937	0.741	0.521	0.797
440	ANN ARBOR, MI	1.064	1.086	1.182	1.253	1.077
450	ANNISTON, AL	0.881	0.952	0.734	0.722	0.887
460	APPLETON-OSHKOSH-NEENAH, WI	0.852	0.986	0.830	0.610	0.882
480	ASHEVILLE, NC	0.810	0.883	0.816	0.399	0.834
500	ATHENS, GA	0.938	0.833	0.840	0.670	0.912
520	ATLANTA, GA	0.885	1.007	1.035	0.670	0.927
560	ATLANTIC CITY, NJ	0.833	1.055	1.093	1.138	0.927
600	AUGUSTA, GA-SC	0.881	0.956	0.840	0.670	0.897
620	AURORA-ELGIN, IL	1.072	1.142	1.237	1.341	1.098
640	AUSTIN, TX	0.971	0.890	1.056	0.475	0.955
680	BAKERSFIELD, CA	1.099	0.960	1.114	1.649	1.086
720	BALTIMORE, MD	1.138	1.060	1.094	0.781	1.090
733	BANGOR, ME	0.640	0.887	0.918	0.820	0.762
760	BATON ROUGE, LA	1.019	0.950	0.993	0.747	0.994
780	BATTLE CREEK, MI	0.909	1.089	0.822	1.253	0.951
840	BEAUMONT-PORT ARTHUR, TX	1.023	0.940	0.958	0.475	0.982
845	BEAVER COUNTY, PA	1.027	1.006	0.894	1.076	1.008
860	BELLINGHAM, WA	0.824	1.075	1.022	0.957	0.911
870	BENTON HARBOR, MI	1.003	1.092	0.912	1.253	1.015
875	BERGEN-PASSAIC, NJ	1.121	1.202	1.507	1.138	1.156
880	BILLINGS, MT	0.966	0.929	1.029	0.735	0.964
920	BILOXI-GULFPORT, MS	0.703	0.854	0.791	0.764	0.779
960	BINGHAMTON, NY	1.322	0.931	0.822	2.109	1.195
1000	BIRMINGHAM, AL	0.968	0.954	0.859	0.722	0.951
1010	BISMARK, ND	.	.	0.921	0.680	.
1020	BLOOMINGTON, IN	.	.	0.855	0.515	.
1040	BLOOMINGTON-NORMAL, IL	0.938	1.002	0.941	1.341	0.970
1080	BOISE CITY,IDAHO	1.051	0.964	1.067	0.843	1.026
1123	BOSTON-LOWELL-BROCKTON-LAWRENCE	1.047	1.065	1.490	0.947	1.085
1125	BOULDER-LONGMONT, CO	1.107	1.054	1.258	0.669	1.084
1140	BRADENTON, FL	0.810	0.939	1.069	1.353	0.902
1145	BRAZORIA, TX	1.117	1.072	1.057	0.475	1.065
1150	BREMERTON, WA	1.174	1.094	1.025	0.957	1.115
1163	BRIDGEPORT-STAMFORD-NORWALK-DAN	1.076	1.061	1.296	0.963	1.082
1240	BROWNSVILLE-HARLINGEN, TX	0.833	0.831	0.848	0.475	0.846
1260	BRYAN-COLLEGE STATION, TX	0.938	0.883	1.126	0.475	0.942
1280	BUFFALO, NY	0.994	0.970	0.884	2.109	1.019
1300	BURLINGTON, NC	0.903	0.913	0.810	0.399	0.891
1303	BURLINGTON, VT	0.966	0.915	1.178	0.438	0.967
1320	CANTON, OH	0.846	1.016	0.798	0.623	0.879

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
1350	CASPER, WY	.	.	1.178	0.582	.
1360	CEDAR RAPIDS, IA	1.051	0.978	0.980	0.679	1.013
1400	CHAMPAIGN-URBANA-RANTOUL, IL	1.108	0.894	0.916	1.341	1.050
1440	CHARLESTON, SC	0.938	0.918	0.918	0.521	0.927
1480	CHARLESTON, WV	1.009	1.047	1.094	0.485	1.004
1520	CHARLOTTE-GASTONIA-ROCK HILL, N	0.932	0.913	0.897	0.399	0.917
1540	CHARLOTTESVILLE, VA	0.861	0.955	1.059	0.577	0.905
1560	CHATTANOOGA, TN-GA	0.852	0.935	0.911	0.354	0.874
1600	CHICAGO, IL	1.072	1.142	1.204	1.341	1.095
1620	CHICO, CA	0.924	1.063	0.978	1.649	0.986
1640	CINCINNATI, OH-KY-IN	0.984	1.062	0.842	0.623	0.970
1660	CLARKSVILLE-HOPKINSVILL, TN-KY	0.739	0.880	0.842	0.354	0.794
1680	CLEVELAND, OH	1.115	1.057	0.953	0.623	1.056
1720	COLORADO SPRINGS, CO	0.988	0.923	0.916	0.669	0.961
1740	COLUMBIA, MO	0.786	0.879	0.901	0.714	0.840
1760	COLUMBIA, SC	0.885	0.906	0.928	0.521	0.896
1800	COLUMBUS, GA-AL	0.902	0.841	0.758	0.670	0.884
1840	COLUMBUS, OH	0.952	0.989	0.909	0.623	0.948
1880	CORPUS CHRISTI, TX	0.896	0.887	0.980	0.475	0.903
1900	CUMBERLAND,MD-W VA	1.108	0.870	0.791	0.781	1.014
1920	DALLAS, TX	0.986	0.982	0.968	0.475	0.968
1950	DANVILLE, VA	0.739	0.808	0.808	0.577	0.787
1960	DAVENPORT-ROCK ISLAND-MOLINE, I	1.080	1.019	1.007	0.679	1.038
2000	DAYTON-SPRINGFIELD, OH	1.064	1.016	0.833	0.623	1.008
2020	DAYTONA BEACH, FL	0.852	0.817	1.034	1.353	0.905
2040	DECATUR, IL	0.767	1.015	0.916	1.341	0.872
2080	DENVER, CO	1.107	1.054	1.162	0.669	1.074
2120	DES MOINES, IA	0.971	0.965	0.976	0.679	0.964
2160	DETROIT, MI	1.285	1.205	0.943	1.253	1.196
2180	DOTHAN, AL	.	.	0.855	0.722	.
2200	DUBUQUE, IA	1.003	0.943	0.906	0.679	0.973
2240	DULUTH, MN-WI	0.985	1.033	0.894	0.755	0.977
2290	EAU CLAIRE, WI	0.796	0.952	0.823	0.610	0.844
2320	EL PASO, TX	0.782	0.832	0.838	0.475	0.815
2330	ELKHART-GOSHEN, IN	0.653	0.989	0.835	0.515	0.765
2335	ELMIRA, NY	0.924	0.972	0.847	2.109	0.975
2340	ENID, OK	0.796	0.881	0.934	0.460	0.840
2360	ERIE, PA	0.896	1.021	0.939	1.076	0.940
2400	EUGENE-SPRINGFIELD, OR	0.988	0.966	1.081	0.902	0.993
2440	EVANSVILLE, IN-KY	1.009	0.993	0.859	0.515	0.973
2520	FARGO-MOORHEAD, ND-MN	0.881	0.961	0.918	0.680	0.906
2560	FAYETTEVILLE, NC	0.909	0.891	0.781	0.399	0.888
2580	FAYETTEVILLE-SPRINGDALE, AR	0.730	0.806	0.801	0.271	0.770
2640	FLINT, MI	1.350	1.247	0.867	1.253	1.232
2650	FLORENCE, AL	0.810	0.827	0.774	0.722	0.833
2655	FLORENCE, SC	0.782	0.879	0.753	0.521	0.815
2670	FORT COLLINS-LOVELAND, CO	1.127	1.062	1.054	0.669	1.076
2680	FORT LAUDERDALE-HOLLYWOOD-POMPA	0.944	0.986	1.227	1.353	1.002
2700	FORT MYERS-CAPE CORAL, FL	0.881	0.851	1.099	1.353	0.933
2710	FORT PIERCE, FL	.	.	1.099	1.353	.
2720	FORT SMITH, AR-OK	0.881	0.935	0.779	0.271	0.874
2750	FORT WALTON BEACH, FL	0.966	0.752	0.734	1.353	0.929
2760	FORT WAYNE, IN	1.104	1.009	0.859	0.515	1.029

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
2800	FORT WORTH-ARLINGTON, TX	0.986	0.982	0.968	0.475	0.968
2840	FRESNO, CA	1.003	1.025	1.019	1.649	1.030
2880	GADSDEN, AL	0.966	0.898	0.678	0.722	0.922
2900	GAINESVILLE, FL	0.932	0.813	0.931	1.353	0.939
2920	GALVESTON-TEXAS CITY, TX	1.307	0.991	0.988	0.475	1.155
2960	GARY-HAMMOND, IN	0.966	1.166	0.987	0.515	0.986
2975	GLENS FALLS, NY	1.051	0.941	0.874	2.109	1.047
2985	GRAND FORKS, ND	.	.	0.875	0.680	.
3000	GRAND RAPIDS, MI	1.046	0.996	0.816	1.253	1.015
3040	GREAT FALLS, MT	.	.	0.887	0.735	.
3060	GREELEY, CO	0.796	0.989	0.912	0.669	0.860
3080	GREEN BAY, WI	0.994	0.969	0.830	0.610	0.961
3120	GREENSBORO-WINSTON-SALEM-HIGH P	0.905	0.937	0.854	0.399	0.900
3160	GREENVILLE-SPARTANBURG, SC	0.902	0.887	0.811	0.521	0.891
3180	HAGERSTOWN, MD	0.668	0.997	0.921	0.781	0.793
3200	HAMILTON-MIDDLETOWN, OH	0.881	1.008	0.944	0.623	0.914
3240	HARRISBURG-LEBANON-CARLISE, PA	0.977	1.044	0.961	1.076	0.992
3283	HARTFORD-MIDDLETOWN-NEW BRITAIN	1.099	1.063	1.175	0.963	1.083
3290	HICKORY, NC	0.881	0.880	0.747	0.399	0.867
3320	HONOLULU, HI	1.066	1.014	1.338	1.071	1.078
3350	HOUMA-THIBODAUX,LA	.	.	0.879	0.747	.
3360	HOUSTON, TX	1.117	1.072	0.943	0.475	1.053
3400	HUNTINGTON-ASHLAND,WV-KY-OH	0.994	0.853	0.897	0.485	0.947
3440	HUNTSVILLE, AL	1.222	0.892	0.862	0.722	1.087
3480	INDIANAPOLIS, IN	1.016	0.994	0.859	0.515	0.977
3500	IOWA CITY, IA	1.003	0.943	1.029	0.679	0.985
3520	JACKSON, MI	1.108	0.970	0.902	1.253	1.056
3560	JACKSON, MS	0.833	0.889	1.005	0.764	0.880
3600	JACKSONVILLE, FL	0.796	0.939	0.975	1.353	0.883
3605	JACKSONVILLE, NC	0.824	0.730	0.776	0.399	0.815
3620	JANESVILLE-BELOIT, WI	0.739	0.989	0.918	0.610	0.826
3640	JERSEY CITY, NJ	1.000	1.093	1.037	1.138	1.022
3660	JOHNSON CITY-KINGSPORT-BRISTOL,	1.051	0.913	0.764	0.354	0.970
3680	JOHNSTOWN, PA	0.817	0.929	0.793	1.076	0.866
3690	JOLIET, IL	1.072	1.142	1.237	1.341	1.098
3710	JOPLIN, MO	0.833	0.790	0.695	0.714	0.832
3720	KALAMAZOO, MI	1.042	1.023	0.912	1.253	1.027
3740	KANKAKEE, IL	0.909	0.939	0.906	1.341	0.941
3760	KANSAS CITY, MO-KS	0.927	1.001	0.943	0.714	0.942
3800	KENOSHA, WI	1.222	1.127	0.958	0.610	1.128
3810	KILLEEN-TEMPLE, TX	0.839	0.917	0.827	0.475	0.859
3840	KNOXVILLE, TN	1.152	0.937	0.840	0.354	1.039
3850	KOKOMO, IN	1.733	0.993	0.874	0.515	1.390
3870	LA CROSSE, WI	.	.	0.978	0.610	.
3880	LAFAYETTE, LA	0.994	0.913	0.993	0.747	0.975
3920	LAFAYETTE, IN	0.924	0.847	0.923	0.515	0.909
3960	LAKE CHARLES, LA	0.909	0.982	0.785	0.747	0.914
3965	LAKE COUNTY, IL	1.072	1.142	1.263	1.341	1.101
3980	LAKELAND-WINTER HAVEN, FL	0.796	0.913	0.880	1.353	0.870
4000	LANCASTER, PA	0.933	0.947	0.980	1.076	0.954
4040	LANSING-EAST LANSING, MI	1.085	1.057	0.961	1.253	1.062
4080	LAREDO, TX	0.796	0.784	0.783	0.475	0.810
4100	LAS CRUCES, NM	.	.	0.823	0.750	.

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
4120	LAS VEGAS, NV	1.136	1.013	1.236	0.947	1.103
4150	LAWRENCE, KS	1.051	0.926	0.983	0.791	1.010
4200	LAWTON, OK	0.796	0.875	0.803	0.460	0.825
4243	LEWISTON-AUBURN, ME	0.640	0.890	0.825	0.820	0.753
4280	LEXINGTON-FAYETTE, KY	0.924	0.916	0.944	0.673	0.927
4320	LIMA, OH	0.774	0.982	0.847	0.623	0.839
4360	LINCOLN, NE	1.028	0.896	0.907	0.443	0.972
4400	LITTLE ROCK-NORTH LITTLE ROCK,	0.888	0.987	0.926	0.271	0.900
4420	LONGVIEW-MARSHALL, TX	0.824	0.855	0.943	0.475	0.854
4440	LORAIN-ELYRIA, OH	1.051	1.035	0.901	0.623	1.011
4480	LOS ANGELES-LONG BEACH, CA	1.281	1.152	1.389	1.649	1.246
4520	LOUISVILLE, KY-IN	1.136	0.971	0.800	0.673	1.042
4600	LUBBOCK, TX	0.843	0.879	0.806	0.475	0.854
4640	LYNCHBURG, VA	0.852	0.900	0.872	0.577	0.873
4680	MACON-WARNER ROBINS, GA	0.739	0.932	0.842	0.670	0.812
4720	MADISON, WI	0.941	1.034	0.951	0.610	0.952
4763	MANCHESTER-NASHUA, NH	0.725	0.864	1.236	0.549	0.831
4800	MANSFIELD, OH	0.924	0.981	0.766	0.623	0.916
4880	MCALLEN-EDINBURG-MISSION, TX	0.767	0.731	0.845	0.475	0.793
4890	MEDFORD, OR	1.023	0.940	1.074	0.902	1.009
4900	MELBOURNE-TITUSVILLE, FL	1.131	1.046	0.993	1.353	1.093
4920	MEMPHIS, TN-AR-MS	0.899	0.971	0.833	0.354	0.898
5000	MIAMI-HIALEAH, FL	1.099	1.004	1.229	1.353	1.094
5015	MIDDLESEX-SOMERSET-HUNTERDON, N	1.182	1.067	1.391	1.138	1.160
5040	MIDLAND, TX	1.250	1.038	1.086	0.475	1.140
5080	MILWAUKEE, WI	1.093	1.078	0.997	0.610	1.051
5120	MINNEAPOLIS-ST PAUL, MN-WI	1.104	1.038	1.128	0.755	1.070
5160	MOBILE, AL	0.881	0.840	0.892	0.722	0.887
5170	MODESTO, CA	1.115	1.024	1.072	1.649	1.100
5190	MONMOUTH-OCEAN, NJ	1.256	1.058	1.249	1.138	1.186
5200	MONROE, LA	1.080	0.879	0.788	0.747	0.997
5240	MONTGOMERY, AL	0.840	0.913	0.793	0.722	0.864
5280	MUNCIE, IN	0.872	0.888	0.746	0.515	0.867
5320	MUSKEGON, MI	1.009	1.014	0.803	1.253	0.996
5345	NAPLES, FL	.	.	1.128	1.353	.
5360	NASHVILLE, TN	0.900	0.906	0.998	0.354	0.906
5380	NASSAU-SUFFOLK, NY	1.293	1.175	1.475	2.109	1.282
5403	NEW BEDFORD-FALL RIVER-ATTLEBOR	0.881	0.899	0.956	0.947	0.911
5483	NEW HAVEN-WEST HAVEN-WATERBURY-	0.924	0.996	1.101	0.963	0.965
5523	NEW LONDON-NORWICH, CT-RI	1.086	1.008	1.178	0.963	1.068
5560	NEW ORLEANS, LA	1.023	0.981	1.094	0.747	1.011
5600	NEW YORK, NY	1.121	1.202	1.111	2.109	1.149
5640	NEWARK, NJ	1.255	1.112	1.167	1.138	1.185
5700	NIAGARA FALLS, NY	0.994	0.970	0.848	2.109	1.016
5720	NORFOLK-VIRGINIA BEACH-NEWPORT	0.986	0.961	0.963	0.577	0.968
5775	OAKLAND, CA	1.172	1.214	1.522	1.649	1.207
5790	OCALA, FL	0.540	0.866	0.811	1.353	0.709
5800	ODESSA, TX	1.023	0.880	1.077	0.475	0.985
5880	OKLAHOMA CITY, OK	0.873	0.980	0.985	0.460	0.904
5910	OLYMPIA, WA	1.222	1.033	1.061	0.957	1.137
5920	OMAHA, NE-IA	0.914	0.973	0.892	0.443	0.916
5950	ORANGE COUNTY, NY	1.094	0.965	1.020	2.109	1.090
5960	ORLANDO, FL	1.032	0.887	1.044	1.353	1.019

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5990	OWENSBORO, KY	.	.	0.870	0.673	.
6000	OXNARD-VENTURA, CA	1.202	1.142	1.522	1.649	1.214
6015	PANAMA CITY, FL	0.966	0.748	0.781	1.353	0.933
6020	PARKERSBURG-MARIETTA, WV-OH	0.668	0.987	0.833	0.485	0.772
6025	PASCAGOULA, MS	1.477	0.880	0.862	0.764	1.234
6080	PENSACOLA, FL	1.003	0.882	0.872	1.353	0.984
6120	PEORIA, IL	1.032	1.098	1.059	1.341	1.051
6160	PHILADELPHIA, PA-NJ	1.089	1.056	1.035	1.076	1.065
6200	PHOENIX, AZ	1.056	0.957	1.153	1.208	1.049
6240	PINE BLUFF, AR	0.796	0.872	0.773	0.271	0.815
6280	PITTSBURGH, PA	1.027	1.006	0.943	1.076	1.013
6323	PITTSFIELD, MA	0.924	0.965	0.968	0.947	0.946
6403	PORTLAND, ME	0.938	0.954	1.061	0.820	0.958
6440	PORTLAND, OR	1.003	1.072	1.010	0.902	1.010
6453	PORTSMOUTH-DOVER-ROCHESTER,NH	0.994	0.896	1.197	0.549	0.986
6460	POUGHKEEPSIE, NY	1.279	0.969	1.165	2.109	1.211
6483	PROVIDENCE-PAWTUCKET-WOONSOCKET	1.018	0.940	0.971	0.707	0.989
6520	PROVO-OREM, UT	0.944	0.870	0.845	0.613	0.920
6560	PUEBLO, CO	0.767	0.981	0.909	0.669	0.843
6600	RACINE, WI	1.014	1.021	0.946	0.610	0.992
6640	RALEIGH-DURHAM, NC	1.028	0.951	0.978	0.399	0.986
6680	READING, PA	1.091	0.873	0.918	1.076	1.028
6690	REDDING, CA	1.108	1.061	1.019	1.649	1.096
6720	RENO, NV	1.115	1.069	1.236	0.947	1.099
6740	RICHLAND-KENNEWICK, WA	1.193	1.016	1.197	0.957	1.132
6760	RICHMOND-PETERSBURG, VA	0.841	0.962	0.953	0.577	0.883
6780	RIVERSIDE-SAN BERNARDINO,CA	1.127	1.061	1.128	1.649	1.118
6800	ROANOKE, VA	0.909	0.901	0.850	0.577	0.903
6820	ROCHESTER, MN	.	.	0.963	0.755	.
6840	ROCHESTER, NY	1.181	1.079	0.993	2.109	1.153
6880	ROCKFORD, IL	1.009	0.966	0.961	1.341	1.008
6920	SACRAMENTO, CA	1.208	1.082	1.178	1.649	1.173
6960	SAGINAW-BAY CITY-MIDLAND, MI	1.030	1.157	0.884	1.253	1.036
6980	ST CLOUD, MN	0.730	0.939	0.918	0.755	0.819
7000	ST JOSEPH, MO	0.796	0.877	0.737	0.714	0.827
7040	ST LOUIS, MO-IL	1.100	0.996	0.934	0.714	1.040
7080	SALEM, OR	0.786	1.051	1.012	0.902	0.883
7120	SALINAS-SEASIDE-MONTEREY, CA	1.023	1.005	1.221	1.649	1.059
7160	SALT LAKE CITY-OGDEN, UT	1.056	1.000	0.976	0.613	1.016
7200	SAN ANGELO, TX	1.250	1.009	0.914	0.475	1.118
7240	SAN ANTONIO, TX	0.867	0.886	0.918	0.475	0.880
7320	SAN DIEGO, CA	1.197	1.021	1.271	1.649	1.167
7360	SAN FRANCISCO, CA	1.172	1.214	1.667	1.649	1.222
7400	SAN JOSE, CA	1.342	1.268	1.545	1.649	1.315
7480	SANTA BARBARA-SANTA MARIA-LOMPO	1.193	1.112	1.379	1.649	1.189
7485	SANTA CRUZ, CA	1.350	1.003	1.493	1.649	1.275
7490	SANTA FE, NM	.	.	1.207	0.750	.
7500	SANTA ROSA-PETALUMA, CA	1.115	1.060	1.313	1.649	1.130
7510	SARASOTA, FL	0.796	0.902	1.157	1.353	0.897
7520	SAVANNAH, GA	0.833	0.920	0.855	0.670	0.866
7560	SCRANTON-WILKES BARRE, PA	0.844	0.906	0.747	1.076	0.873
7600	SEATTLE, WA	1.159	1.123	1.103	0.957	1.118
7610	SHARON,PA	0.909	0.976	0.870	1.076	0.934

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
7620	SHEBOYGAN, WI	0.909	0.948	0.848	0.610	0.911
7640	SHERMAN-DENISON, TX	0.938	0.883	0.830	0.475	0.911
7680	SHREVEPORT, LA	0.928	0.920	0.897	0.747	0.928
7720	SIOUX CITY, IA-NE	0.881	0.835	0.884	0.679	0.884
7760	SIOUX FALLS, SD	1.023	0.948	0.889	0.746	0.985
7800	SOUTH BEND-MISHAWAKA, IN	1.038	0.954	0.838	0.515	0.981
7840	SPOKANE, WA	0.918	0.964	0.975	0.957	0.944
7880	SPRINGFIELD, IL	0.952	0.949	0.965	1.341	0.974
7920	SPRINGFIELD, MO	0.782	0.881	0.773	0.714	0.824
8003	SPRINGFIELD,MA	0.893	0.991	1.086	0.947	0.945
8050	STATE COLLEGE,PA	0.994	0.959	1.049	1.076	0.999
8080	STEUBENVILLE-WEIRTON, OH-WV	0.767	1.039	0.971	0.623	0.856
8120	STOCKTON, CA	0.973	1.072	1.002	1.649	1.018
8160	SYRACUSE, NY	1.015	0.977	0.859	2.109	1.029
8200	TACOMA, WA	1.058	1.061	0.975	0.957	1.038
8240	TALLAHASSEE, FL	0.839	0.897	0.916	1.353	0.896
8280	TAMPA-ST. PETERSBURG-CLEAR, FL	0.919	0.923	0.965	1.353	0.951
8320	TERRE HAUTE, IN	0.717	0.812	0.764	0.515	0.769
8360	TEXARKANA, TX-TEXARKANA, AR	0.758	0.978	0.766	0.475	0.815
8400	TOLEDO, OH	0.947	1.028	0.843	0.623	0.944
8440	TOPEKA, KS	0.867	0.903	0.892	0.791	0.891
8480	TRENTON, NJ	1.101	1.034	1.306	1.138	1.100
8520	TUCSON, AZ	0.981	0.988	1.103	1.208	1.005
8560	TULSA, OK	0.914	0.925	1.015	0.460	0.922
8600	TUSCALOOSA, AL	0.994	0.919	0.830	0.722	0.958
8640	TYLER, TX	0.938	0.917	0.955	0.475	0.929
8680	UTICA-ROME, NY	1.003	0.902	0.763	2.109	1.002
8720	VALLEJO-FAIRFIELD-NAPA, CA	1.073	1.088	1.273	1.649	1.106
8725	VANCOUVER, WA	1.003	1.072	0.859	0.957	0.996
8750	VICTORIA, TX	0.796	0.790	1.165	0.475	0.851
8760	VINELAND-MILLVILLE-BRIDGETON, N	1.392	0.951	1.049	1.138	1.228
8780	VISALIA-TULARE-PORTERVILLE, CA	0.924	0.958	1.077	1.649	0.981
8800	WACO, TX	0.896	0.835	0.768	0.475	0.874
8840	WASHINGTON, D C -MD-VA	1.344	1.176	1.254	1.004	1.250
8920	WATERLOO-CEDAR FALLS, IA	0.774	1.063	0.983	0.679	0.866
8940	WAUSAU, WI	0.938	0.978	0.830	0.610	0.930
8960	WEST PALM BEACH-BOCA RATON-DELR	1.009	0.922	1.049	1.353	1.011
9000	WHEELING, WV-OH	0.748	0.860	0.843	0.485	0.801
9040	WICHITA, KS	0.990	1.073	0.960	0.791	0.993
9080	WICHITA FALLS, TX	0.909	0.895	0.860	0.475	0.900
9140	WILLIAMSPORT, PA	0.796	0.933	0.793	1.076	0.854
9160	WILMINGTON, DE-NJ-MD	1.307	1.076	1.019	0.552	1.173
9200	WILMINGTON, NC	0.966	0.898	0.816	0.399	0.926
9243	WORCESTER-FITCHBURG-LEOMINSTER,	0.846	0.940	1.086	0.947	0.910
9260	YAKIMA, WA	0.782	0.978	0.933	0.957	0.863
9280	YORK, PA	1.009	0.926	0.884	1.076	0.985
9320	YOUNGSTOWN-WARREN, OH	0.896	1.063	0.847	0.623	0.920
9340	YUBA CITY, CA	1.136	0.944	0.886	1.649	1.081
.	Alabama	0.790	0.856	0.620	0.722	0.809
.	Alaska	1.619	1.345	1.791	1.124	1.492
.	Arizona	0.893	0.979	0.825	1.208	0.925
.	Arkansas	0.715	0.808	0.653	0.271	0.747
.	California	0.966	0.938	1.019	1.649	0.996

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.	Colorado	0.816	0.930	0.909	0.669	0.863
.	Connecticut	0.916	0.991	1.109	0.963	0.960
.	Delaware	0.796	0.820	0.862	0.552	0.826
.	Florida	0.782	0.810	0.655	1.353	0.824
.	Georgia	0.734	0.824	0.677	0.670	0.777
.	Hawaii	1.042	1.060	1.279	1.071	1.065
.	Idaho	0.817	0.842	0.864	0.843	0.852
.	Illinois	0.892	0.916	0.790	1.341	0.916
.	Indiana	0.803	0.870	0.746	0.515	0.825
.	Iowa	0.782	0.850	0.786	0.679	0.820
.	Kansas	0.725	0.872	0.721	0.791	0.787
.	Kentucky	0.833	0.861	0.710	0.673	0.842
.	Louisiana	0.791	0.876	0.638	0.747	0.816
.	Maine	0.639	0.883	0.867	0.820	0.756
.	Maryland	1.051	0.923	0.894	0.781	1.000
.	Massachusetts	0.907	0.974	1.035	0.947	0.945
.	Michigan	0.950	0.966	0.808	1.253	0.955
.	Minnesota	0.808	0.886	0.793	0.755	0.843
.	Mississippi	0.719	0.797	0.667	0.764	0.767
.	Missouri	0.705	0.809	0.682	0.714	0.760
.	Montana	0.881	0.880	0.833	0.735	0.888
.	Nebraska	0.713	0.814	0.719	0.443	0.759
.	Nevada	0.881	1.045	1.076	0.947	0.944
.	New Hampshire	0.756	0.865	1.011	0.549	0.826
.	New Mexico	0.861	0.871	0.768	0.750	0.869
.	New York	0.890	0.933	0.811	2.109	0.946
.	North Carolina	0.775	0.838	0.732	0.399	0.799
.	North Dakota	0.776	0.794	0.779	0.680	0.807
.	Ohio	0.788	0.912	0.795	0.623	0.831
.	Oklahama	0.776	0.878	0.660	0.460	0.800
.	Oregon	0.836	0.987	0.983	0.902	0.899
.	Pennsylvania	0.826	0.932	0.768	1.076	0.869
.	Rhode Island	.	.	0.987	0.707	.
.	South Carolina	0.699	0.850	0.682	0.521	0.756
.	South Dakota	0.671	0.780	0.729	0.746	0.742
.	Tennessee	0.881	0.821	0.694	0.354	0.851
.	Texas	0.733	0.808	0.717	0.475	0.771
.	Utah	0.858	0.913	0.924	0.613	0.884
.	Vermont	0.730	0.858	0.891	0.438	0.793
.	Virginia	0.841	0.843	0.773	0.577	0.848
.	Washington	1.016	0.938	0.921	0.957	0.990
.	West Virginia	0.836	0.862	0.754	0.485	0.843
.	Wisconsin	0.827	0.901	0.764	0.610	0.848
.	Wyoming	1.009	1.045	0.758	0.582	0.972

Note: State values shown are for rural areas.

APPENDIX A2

Input Price Proxies and the Basic GMEI by Medicare Carrier Locality

Appendix A2. Input Price Proxies and Basic GMEI

By Carrier Localities

Carrier-Locality Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
0051005	MONTGOMERY, AL	0.968	0.954	0.859	0.722	0.951
0051002	NORTH CENTRAL AL	0.905	0.905	0.717	0.722	0.892
0051001	NORTHEAST AL	0.957	0.862	0.750	0.722	0.919
0051006	RURAL AL *	0.825	0.877	0.681	0.722	0.838
0051003	SOUTHEAST AL *	0.824	0.880	0.731	0.717	0.841
0051004	SOUTHWEST AL	0.881	0.840	0.892	0.722	0.887
0102001	ALASKA	1.577	1.398	1.669	1.124	1.463
0103005	FLAGSTAFF (CITY), AZ	0.893	0.979	0.825	1.208	0.925
0103001	PHOENIX (CITY), AZ	1.056	0.957	1.153	1.208	1.049
0103007	PRESCOTT (CITY), AZ	0.893	0.979	0.825	1.208	0.925
0103099	RURAL ARIZONA	0.936	0.977	0.932	1.208	0.960
0103002	TUCSON (CITY), AZ	0.981	0.988	1.103	1.208	1.005
0103008	YUMA (CITY), AZ	0.893	0.979	0.825	1.208	0.925
0052013	ARKANSAS	0.769	0.861	0.734	0.276	0.794
0205026	ANAHEIM-SANTA ANA, CA	1.305	1.158	1.551	1.649	1.278
0054214	BAKERSFIELD, CA	1.099	0.960	1.114	1.649	1.086
0054211	FRESNO/MADERA, CA	0.999	1.015	1.019	1.649	1.027
0054213	KINGS/TULARE, CA	0.934	0.953	1.064	1.649	0.985
0205018	LOS ANGELES, CA (1ST OF 8)	1.281	1.152	1.389	1.649	1.246
0205019	LOS ANGELES, CA (2ND OF 8)	1.281	1.152	1.389	1.649	1.246
0205020	LOS ANGELES, CA (3RD OF 8)	1.281	1.152	1.389	1.649	1.246
0205021	LOS ANGELES, CA (4TH OF 8)	1.281	1.152	1.389	1.649	1.246
0205022	LOS ANGELES, CA (5TH OF 8)	1.281	1.152	1.389	1.649	1.246
0205023	LOS ANGELES, CA (6TH OF 8)	1.281	1.152	1.389	1.649	1.246
0205024	LOS ANGELES, CA (7TH OF 8)	1.281	1.152	1.389	1.649	1.246
0205025	LOS ANGELES, CA (8TH OF 8)	1.281	1.152	1.389	1.649	1.246
0054203	MARIN/NAPA/SOLANO, CA	1.112	1.138	1.430	1.649	1.152
0054210	MERCED/SURR. CNTYS, CA	1.062	0.994	1.053	1.649	1.063
0054212	MONTEREY/SANTA CRUZ, CA	1.142	1.001	1.312	1.649	1.137
0054201	N. COASTAL CNTYS, CA	1.050	1.007	1.185	1.649	1.072
0054202	NE RURAL CA	1.018	0.999	0.982	1.649	1.031
0054207	OAKLAND-BERKELEY, CA	1.172	1.214	1.522	1.649	1.207
0054227	RIVERSIDE, CA	1.127	1.061	1.128	1.649	1.118
0054204	SACRAMENTO/SURR. CNTYS, CA	1.197	1.076	1.171	1.649	1.165
0054215	SAN BERNADINO/E.CENTRAL CA	1.123	1.058	1.125	1.649	1.115
0205028	SAN DIEGO/IMPERIAL, CA	1.186	1.018	1.259	1.649	1.159
0054205	SAN FRANCISCO, CA	1.172	1.214	1.667	1.649	1.222
0054206	SAN MATEO, CA	1.172	1.214	1.667	1.649	1.222
0205016	SANTA BARBARA, CA	1.115	1.052	1.255	1.649	1.123
0054209	SANTA CLARA, CA	1.342	1.268	1.545	1.649	1.315
0054208	STOCKTON/SURR. CNTYS, CA	0.972	1.048	1.005	1.649	1.014
0205017	VENTURA, CA	1.202	1.142	1.522	1.649	1.214
0055001	COLORADO	1.010	1.010	1.065	0.669	1.003
0307004	EASTERN CONN.	1.057	1.024	1.163	0.963	1.052
0307001	NW AND N.CENTRAL CONN.	1.043	1.040	1.153	0.963	1.045
0307003	SOUTH CENTRAL CONN.	0.987	1.023	1.182	0.963	1.013
0307002	SW CONNECTICUT	1.068	1.057	1.286	0.963	1.076
0057001	DELAWARE	1.138	0.991	0.967	0.552	1.059
0058001	D.C. + MD/VA SUBURBS	1.344	1.176	1.254	1.004	1.250
0059003	FORT LAUDERDALE, FL *	0.952	0.946	1.136	1.353	0.992
0059004	MIAMI, FL	1.087	0.997	1.207	1.353	1.083
0059002	N/NC FLORIDA CITIES	0.909	0.910	0.972	1.353	0.944
0059001	RURAL FLORIDA	0.819	0.833	0.765	1.353	0.860

Carrier-Locality Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
1311001	ATLANTA, GA	0.885	1.007	1.035	0.670	0.927
1311004	RURAL GEORGIA	0.752	0.836	0.701	0.667	0.791
1311002	SMALL GA CITIES 02	0.832	0.915	0.827	0.670	0.861
1311003	SMALL GA CITIES 03	0.775	0.859	0.761	0.638	0.813
0112001	HAWAII	1.061	1.024	1.326	1.071	1.075
0513012	NORTH IDAHO	0.817	0.842	0.864	0.843	0.852
0513011	SOUTH IDAHO	0.873	0.871	0.912	0.843	0.894
0062110	CHAMPAIGN-URBANA, IL	1.022	0.903	0.865	1.341	0.996
0062116	CHICAGO, IL	1.072	1.142	1.204	1.341	1.095
0062103	DE KALB, IL	0.922	0.954	0.865	1.341	0.947
0062111	DECATUR, IL	0.836	0.961	0.846	1.341	0.896
0062112	EAST ST. LOUIS, IL	1.057	0.979	0.904	0.844	1.014
0062106	KANKAKEE, IL	0.901	0.928	0.852	1.341	0.929
0062108	NORMAL, IL	0.958	1.010	0.937	1.341	0.982
0062101	NORTHWEST, IL	0.892	0.916	0.790	1.341	0.916
0062105	PEORIA, IL	1.024	1.087	1.043	1.341	1.043
0062107	QUINCY, IL	0.892	0.916	0.790	1.341	0.916
0062104	ROCK ISLAND, IL	1.014	0.983	0.931	0.909	0.995
0062102	ROCKFORD, IL	1.031	1.027	1.045	1.341	1.038
0062113	SOUTHEAST IL	0.892	0.916	0.790	1.341	0.916
0062114	SOUTHERN IL	0.892	0.916	0.790	1.341	0.916
0062109	SPRINGFIELD, IL	0.943	0.944	0.936	1.341	0.964
0062115	SUBURBAN CHICAGO, IL	1.072	1.142	1.231	1.341	1.098
0063001	METROPOLITAN INDIANA	0.991	1.029	0.879	0.515	0.970
0063003	RURAL INDIANA	0.867	0.901	0.773	0.520	0.869
0063002	URBAN INDIANA *	0.938	0.919	0.811	0.529	0.916
0064005	DES MOINES(POLK/WARREN),IA	0.971	0.965	0.976	0.679	0.964
0064008	IOWA CITY (CITY LIMITS)	1.003	0.943	1.029	0.679	0.985
0064003	NORTH CENTRAL IOWA	0.779	0.935	0.865	0.679	0.838
0064002	NORTHEAST IOWA	0.918	0.912	0.876	0.679	0.916
0064006	NORTHWEST IOWA	0.806	0.846	0.810	0.679	0.835
0064004	S.CEN. IA(EXCL DES MOINES)	0.782	0.850	0.786	0.679	0.820
0064001	SE IOWA (EXCL IOWA CITY)	0.908	0.919	0.886	0.679	0.913
0064007	SOUTHWEST IOWA	0.826	0.886	0.824	0.626	0.852
0074005	KANSAS CITY, KA	0.927	1.001	0.943	0.714	0.942
0065001	RURAL KANSAS	0.813	0.925	0.804	0.788	0.854
0074004	SUBURBAN KANSAS CITY, KA	0.927	1.001	0.943	0.714	0.942
0066001	LEXINGTON & LOUISVILLE, KY	1.067	0.953	0.847	0.673	1.004
0066003	RURAL KENTUCKY *	0.893	0.890	0.748	0.658	0.884
0066002	SM CITIES (CITY LIMITS) KY *	0.896	0.923	0.797	0.630	0.894
0052807	ALEXANDRIA, LA	0.767	0.878	0.791	0.747	0.818
0052803	BATON ROUGE, LA	1.019	0.950	0.993	0.747	0.994
0052806	LAFAYETTE, LA	0.943	0.904	0.904	0.747	0.935
0052804	LAKE CHARLES, LA	0.909	0.982	0.785	0.747	0.914
0052805	MONROE, LA	1.080	0.879	0.788	0.747	0.997
0052801	NEW ORLEANS, LA	1.017	0.979	1.083	0.747	1.007
0052850	RURAL LOUISIANA *	0.835	0.894	0.735	0.747	0.852
0052802	SHREVEPORT, LA	0.928	0.920	0.897	0.747	0.928
2120002	CENTRAL MAINE	0.639	0.885	0.855	0.820	0.755
2120001	NORTHERN MAINE	0.639	0.884	0.883	0.820	0.758
2120003	SOUTHERN MAINE	0.820	0.926	0.985	0.820	0.878
0069001	BALTIMORE/SURR. CNTYS, MD	1.138	1.060	1.094	0.781	1.090
0069003	SOUTH + E. SHORE MD	1.157	1.009	1.005	0.803	1.085
0069002	WESTERN MARYLAND	1.036	1.022	1.002	0.858	1.019

Carrier-Locality Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
0070002	MASS.SUBURBS/RURAL(CITIES)	0.952	0.991	1.221	0.947	0.992
0070001	MASSACHUSETTS URBAN	1.004	1.041	1.386	0.947	1.047
0071001	DETROIT, MI	1.272	1.197	0.957	1.253	1.189
0071002	MICHIGAN, NOT DETROIT	1.058	1.053	0.857	1.253	1.035
0072002	NORTHERN MINNESOTA	0.861	0.939	0.866	0.752	0.889
0072004	SOUTHERN MINNESOTA	0.839	0.902	0.828	0.755	0.867
1024001	ST. PAUL-MINNEAPOLIS, MN *	1.083	1.027	1.098	0.755	1.054
1025001	RURAL MISSISSIPPI	0.733	0.809	0.696	0.752	0.779
1025002	URBAN MS (CITY LIMITS)	0.884	0.856	0.847	0.764	0.888
0074003	K.C. (JACKSON COUNTY), MO	0.927	1.001	0.943	0.714	0.942
0074002	N. K.C. (CLAY/PLATTE), MO	0.927	1.001	0.943	0.714	0.942
1126003	RURAL (EXCL RURAL NW) MO	0.737	0.822	0.705	0.714	0.783
0074006	RURAL NW COUNTIES, MO	0.757	0.854	0.743	0.714	0.802
1126002	SM. E.CITIES+JEFF.CNTY,MO	0.921	0.901	0.811	0.714	0.911
0074001	ST. JOSEPH, MO	0.796	0.877	0.737	0.714	0.827
1126001	ST. LOUIS/LG. E.CITIES, MO	1.058	0.980	0.917	0.714	1.012
0075101	MONTANA *	0.894	0.888	0.866	0.735	0.899
0064501	OMAHA + LINCOLN, NE	0.951	0.948	0.897	0.443	0.934
0064504	RURAL NEBRASKA	0.723	0.819	0.728	0.450	0.767
0064503	URBAN (CNTY POP>25000) NE	0.756	0.849	0.757	0.443	0.793
0129003	ELKO & ELY (CITIES), NV	0.881	1.045	1.076	0.947	0.944
0129001	LAS VEGAS,ET AL(CITIES),NV	1.136	1.013	1.236	0.947	1.103
0129002	RENO, ET AL (CITIES), NV	1.072	1.065	1.206	0.947	1.070
0129099	RURAL NEVADA	1.066	1.029	1.193	0.947	1.060
0078040	NEW HAMPSHIRE	0.818	0.874	1.134	0.549	0.875
1331002	MIDDLE NEW JERSEY	1.185	1.053	1.210	1.124	1.140
1331001	NORTHERN NEW JERSEY	1.170	1.124	1.282	1.137	1.150
1331003	SOUTHERN NEW JERSEY	1.075	1.045	1.050	1.069	1.057
0532001	NEW MEXICO *	0.913	0.896	0.890	0.750	0.912
0080101	BUFFALO/SURR. CNTYS, NY	0.983	0.967	0.870	2.109	1.011
0080301	MANHATTAN, NY	1.121	1.202	1.111	2.109	1.149
0080103	N. CENTRAL CITIES, NY	1.085	0.971	0.865	2.109	1.069
0080302	NYC SUBURBS/LONG I., NY	1.181	1.193	1.238	2.109	1.195
0080303	POUGHKPSIE/N.NYC SUBURBS	1.073	0.976	0.988	2.109	1.076
1433004	QUEENS, NY	1.121	1.202	1.111	2.109	1.149
0080102	ROCHESTER/SURR. CNTYS, NY	1.165	1.071	0.983	2.109	1.142
0080104	RURAL NEW YORK	0.997	0.953	0.841	2.109	1.014
1334095	RURAL NORTH CAROLINA	0.841	0.870	0.788	0.399	0.847
1334094	URBAN (CITY LIMITS) NC	0.946	0.930	0.904	0.399	0.928
0082001	NORTH DAKOTA *	0.794	0.823	0.825	0.680	0.825
1636001	AKRON, OH	1.035	1.036	0.872	0.623	0.999
1636002	CINCINATI, OH	0.960	1.049	0.860	0.623	0.956
1636003	CLEVELAND, OH	1.082	1.043	0.935	0.623	1.033
1636004	COLUMBUS, OH	0.952	0.989	0.909	0.623	0.948
1636005	DAYTON, OH	1.023	1.000	0.828	0.623	0.982
1636009	E. CENTRAL (STEUBENVL), OH	0.787	0.947	0.835	0.623	0.839
1636007	MANSFIELD, OH	0.853	0.945	0.781	0.623	0.872
1636013	MARION + SURR. CNTYS., OH	0.805	0.920	0.808	0.623	0.843
1636006	NORTHWEST (LIMA) OH	0.797	0.948	0.819	0.623	0.844
1636014	SCIOTO VALLEY, OH	0.886	0.958	0.864	0.623	0.901
1636015	SOUTHEAST (OHIO VALLEY) OH	0.791	0.907	0.815	0.579	0.833
1636008	SPRINGFIELD, OH	1.064	1.016	0.833	0.623	1.008
1636010	TOLEDO (LUCAS/WOOD), OH	0.947	1.028	0.843	0.623	0.944
1636012	W. CENTR (LAKE PLAINS), OH	0.788	0.912	0.795	0.623	0.831

Carrier-Locality Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
1636011	YOUNGSTOWN, OH	0.877	1.036	0.838	0.623	0.904
0137001	OK CITY, ET AL (CITIES),OK	0.872	0.979	0.981	0.460	0.902
0137099	RURAL OKLAHOMA	0.807	0.895	0.746	0.456	0.828
0137004	SM. CITIES (NORTHERN), OK	0.782	0.879	0.749	0.460	0.813
0137003	SM. CITIES (SOUTHERN), OK	0.784	0.877	0.717	0.460	0.810
0137002	TULSA, ET AL (CITIES), OK	0.895	0.919	0.967	0.460	0.906
0138002	EUGENE, ET AL (CITIES), OR	0.965	0.969	1.066	0.902	0.979
0138001	PORTLAND,ET AL (CITIES),OR	1.003	1.072	1.010	0.902	1.010
0138099	RURAL OREGON	0.901	1.011	1.006	0.902	0.942
0138003	SALEM, ET AL (CITIES), OR	0.805	1.027	1.001	0.902	0.889
0138012	SW OR. CITIES(CITY LIMITS)	0.940	0.961	1.034	0.902	0.960
0086502	LG. PENNSYLVANIA CITIES	1.045	1.017	0.972	1.076	1.028
0086501	PHILLY/PITT MED SCHS/HOSPS	1.064	1.036	0.998	1.076	1.045
0086504	RURAL PENNSYLVANIA	0.866	0.949	0.836	1.076	0.901
0086503	SMALL PENNSYLVANIA CITIES	0.917	0.952	0.848	1.076	0.932
0087001	RHODE ISLAND *	1.018	0.940	0.973	0.707	0.989
0088001	SOUTH CAROLINA	0.812	0.884	0.788	0.522	0.837
0082002	SOUTH DAKOTA	0.726	0.807	0.754	0.746	0.780
0544035	TENNESSEE	0.929	0.893	0.816	0.354	0.902
0090029	ABILENE, TX	0.843	0.856	0.907	0.475	0.861
0090026	AMARILLO, TX	0.839	0.958	0.833	0.475	0.866
0090031	AUSTIN, TX	0.971	0.890	1.056	0.475	0.955
0090020	BEAUMONT, TX	1.023	0.940	0.958	0.475	0.982
0090009	BRAZORIA, TX	1.117	1.072	1.057	0.475	1.065
0090010	BROWNSVILLE, TX	0.833	0.831	0.848	0.475	0.846
0090024	CORPUS CHRISTI, TX	0.896	0.887	0.980	0.475	0.903
0090011	DALLAS, TX	0.986	0.982	0.968	0.475	0.968
0090012	DENTON, TX	0.986	0.982	0.968	0.475	0.968
0090014	EL PASO, TX	0.782	0.832	0.838	0.475	0.815
0090028	FORT WORTH, TX	0.986	0.982	0.968	0.475	0.968
0090015	GALVESTON, TX	1.307	0.991	0.988	0.475	1.155
0090016	GRAYSON, TX	0.938	0.883	0.830	0.475	0.911
0090018	HOUSTON, TX	1.117	1.072	0.943	0.475	1.053
0090033	LAREDO, TX	0.796	0.784	0.783	0.475	0.810
0090017	LONGVIEW, TX	0.824	0.855	0.943	0.475	0.854
0090021	LUBBOCK, TX	0.843	0.879	0.806	0.475	0.854
0090019	MC ALLEN, TX	0.767	0.731	0.845	0.475	0.793
0090023	MIDLAND, TX	1.250	1.038	1.086	0.475	1.140
0090002	NORTHEAST RURAL TEXAS	0.811	0.862	0.800	0.475	0.832
0090013	ODESSA, TX	1.023	0.880	1.077	0.475	0.985
0090025	ORANGE, TX	1.023	0.940	0.958	0.475	0.982
0090030	SAN ANGELO, TX	1.250	1.009	0.914	0.475	1.118
0090007	SAN ANTONIO, TX	0.867	0.886	0.918	0.475	0.880
0090003	SOUTHEAST RURAL TEXAS	0.844	0.873	0.822	0.475	0.855
0090006	TEMPLE, TX	0.839	0.917	0.827	0.475	0.859
0090008	TEXARKANA, TX	0.758	0.978	0.766	0.475	0.815
0090027	TYLER, TX	0.938	0.917	0.955	0.475	0.929
0090032	VICTORIA, TX	0.796	0.790	1.165	0.475	0.851
0090022	WACO, TX	0.896	0.835	0.768	0.475	0.874
0090004	WESTERN RURAL TEXAS	0.741	0.819	0.726	0.475	0.778
0090034	WICHITA FALLS, TX	0.909	0.895	0.860	0.475	0.900
0091001	UTAH	0.994	0.961	0.945	0.613	0.972
0078050	VERMONT	0.785	0.871	0.958	0.438	0.834
1049001	RICHMOND+CHARLOTTESVL, VA	0.844	0.961	0.968	0.577	0.887

Carrier-Locality Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
1049004	RURAL VIRGINIA	0.850	0.871	0.813	0.572	0.861
1049003	SM. TOWN/INDUSTRIAL VA	0.872	0.870	0.815	0.579	0.873
1049002	TIDEWATER+N. VA COUNTIES	1.040	0.992	1.005	0.646	1.010
0093004	E.CEN+NE WA (EXCL SPOKANE)	1.001	0.960	0.982	0.957	0.991
0093002	SEATTLE (KING CNTY), WA	1.159	1.123	1.103	0.957	1.118
0093003	SPOKANE+RICHLND(CITIES),WA	1.010	0.982	1.049	0.957	1.007
0093001	W + SE WA (EXCL SEATTLE)	1.041	1.031	0.976	0.957	1.024
1651016	CHARLESTON, WV	0.986	0.965	0.994	0.485	0.968
1651018	EASTERN VALLEY, WV	0.883	0.864	0.761	0.536	0.872
1651019	OHIO RIVER VALLEY, WV	0.802	0.888	0.770	0.485	0.828
1651020	SOUTHERN VALLEY, WV	0.836	0.862	0.754	0.485	0.843
1651017	WHEELING, WV	0.795	0.899	0.828	0.514	0.833
0095113	CENTRAL WISCONSIN	0.827	0.901	0.764	0.610	0.848
0095140	GREEN BAY, WI (NORTHEAST)	0.891	0.946	0.803	0.610	0.895
0095154	JANESVILLE, WI (S-CENTRAL)	0.795	0.933	0.820	0.610	0.840
0095119	LA CROSSE, WI (W-CENTRAL) *	0.865	0.940	0.880	0.629	0.885
0095115	MADISON, WI (DANE COUNTY)	0.941	1.034	0.951	0.610	0.952
0095146	MILWAUKEE SUBURBS, WI (SE)	1.096	1.073	0.978	0.610	1.050
0095104	MILWAUKEE, WI	1.093	1.078	0.997	0.610	1.051
0095112	NORTHWEST WISCONSIN	0.844	0.927	0.791	0.630	0.865
0095160	OSHKOSH, WI (E-CENTRAL)	0.856	0.944	0.808	0.610	0.875
0095114	SOUTHWEST WISCONSIN	0.827	0.901	0.764	0.610	0.848
0095136	WAUSAU, WI (N-CENTRAL)	0.864	0.927	0.786	0.610	0.875
0553002	WYOMING *	1.009	1.045	0.822	0.582	0.972

* The values shown for these localities are based on partial data. Specifically, Census data used in some of the price proxies was not available for certain small MSAs. For the 14 localities where this was an issue, the percentage of population in these small MSAs ranged from 1 to 27 percent.

APPENDIX B

Input Price Proxies by MSAs and Rural Areas of States: Ordered by Basic GMEI Value

Appendix B. Input Price Proxies

By MSAs and Rural Areas of States:

Ordered by Basic GMEI Value

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
.	Alaska	1.619	1.345	1.791	1.124	1.492
380	ANCHORAGE, AK	1.521	1.466	1.510	1.124	1.424
3850	KOKOMO, IN	1.733	0.993	0.874	0.515	1.390
7400	SAN JOSE, CA	1.342	1.268	1.545	1.649	1.315
5380	NASSAU-SUFFOLK, NY	1.293	1.175	1.475	2.109	1.282
360	ANAHEIM-SANTA ANA,CA	1.305	1.158	1.551	1.649	1.278
7485	SANTA CRUZ, CA	1.350	1.003	1.493	1.649	1.275
8840	WASHINGTON, D C -MD-VA	1.344	1.176	1.254	1.004	1.250
4480	LOS ANGELES-LONG BEACH, CA	1.281	1.152	1.389	1.649	1.246
6025	PASCAGOULA, MS	1.477	0.880	0.862	0.764	1.234
2640	FLINT, MI	1.350	1.247	0.867	1.253	1.232
8760	VINELAND-MILLVILLE-BRIDGETON, N	1.392	0.951	1.049	1.138	1.228
7360	SAN FRANCISCO, CA	1.172	1.214	1.667	1.649	1.222
6000	OXNARD-VENTURA, CA	1.202	1.142	1.522	1.649	1.214
6460	POUGHKEEPSIE, NY	1.279	0.969	1.165	2.109	1.211
5775	OAKLAND, CA	1.172	1.214	1.522	1.649	1.207
2160	DETROIT, MI	1.285	1.205	0.943	1.253	1.196
960	BINGHAMTON, NY	1.322	0.931	0.822	2.109	1.195
7480	SANTA BARBARA-SANTA MARIA-LOMPO	1.193	1.112	1.379	1.649	1.189
5190	MONMOUTH-OCEAN, NJ	1.256	1.058	1.249	1.138	1.186
5640	NEWARK, NJ	1.255	1.112	1.167	1.138	1.185
9160	WILMINGTON, DE-NJ-MD	1.307	1.076	1.019	0.552	1.173
6920	SACRAMENTO, CA	1.208	1.082	1.178	1.649	1.173
7320	SAN DIEGO, CA	1.197	1.021	1.271	1.649	1.167
5015	MIDDLESEX-SOMERSET-HUNTERDON, N	1.182	1.067	1.391	1.138	1.160
875	BERGEN-PASSAIC, NJ	1.121	1.202	1.507	1.138	1.156
2920	GALVESTON-TEXAS CITY, TX	1.307	0.991	0.988	0.475	1.155
6840	ROCHESTER, NY	1.181	1.079	0.993	2.109	1.153
5600	NEW YORK, NY	1.121	1.202	1.111	2.109	1.149
5040	MIDLAND, TX	1.250	1.038	1.086	0.475	1.140
5910	OLYMPIA, WA	1.222	1.033	1.061	0.957	1.137
6740	RICHLAND-KENNEWICK, WA	1.193	1.016	1.197	0.957	1.132
7500	SANTA ROSA-PETALUMA, CA	1.115	1.060	1.313	1.649	1.130
3800	KENOSHA, WI	1.222	1.127	0.958	0.610	1.128
7600	SEATTLE, WA	1.159	1.123	1.103	0.957	1.118
6780	RIVERSIDE-SAN BERNARDINO,CA	1.127	1.061	1.128	1.649	1.118
7200	SAN ANGELO, TX	1.250	1.009	0.914	0.475	1.118
1150	BREMERTON, WA	1.174	1.094	1.025	0.957	1.115
8720	VALLEJO-FAIRFIELD-NAPA, CA	1.073	1.088	1.273	1.649	1.106
4120	LAS VEGAS, NV	1.136	1.013	1.236	0.947	1.103
3965	LAKE COUNTY, IL	1.072	1.142	1.263	1.341	1.101
8480	TRENTON, NJ	1.101	1.034	1.306	1.138	1.100
5170	MODESTO, CA	1.115	1.024	1.072	1.649	1.100
6720	RENO, NV	1.115	1.069	1.236	0.947	1.099
620	AURORA-ELGIN, IL	1.072	1.142	1.237	1.341	1.098
3690	JOLIET, IL	1.072	1.142	1.237	1.341	1.098
6690	REDDING, CA	1.108	1.061	1.019	1.649	1.096
1600	CHICAGO, IL	1.072	1.142	1.204	1.341	1.095
5000	MIAMI-HIALEAH, FL	1.099	1.004	1.229	1.353	1.094

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
4900	MELBOURNE-TITUSVILLE, FL	1.131	1.046	0.993	1.353	1.093
5950	ORANGE COUNTY, NY	1.094	0.965	1.020	2.109	1.090
720	BALTIMORE, MD	1.138	1.060	1.094	0.781	1.090
3440	HUNTSVILLE, AL	1.222	0.892	0.862	0.722	1.087
680	BAKERSFIELD, CA	1.099	0.960	1.114	1.649	1.086
1123	BOSTON-LOWELL-BROCKTON-LAWRENCE	1.047	1.065	1.490	0.947	1.085
1125	BOULDER-LONGMONT, CO	1.107	1.054	1.258	0.669	1.084
3283	HARTFORD-MIDDLETOWN-NEW BRITAIN	1.099	1.063	1.175	0.963	1.083
1163	BRIDGEPORT-STAMFORD-NORWALK-DAN	1.076	1.061	1.296	0.963	1.082
9340	YUBA CITY, CA	1.136	0.944	0.886	1.649	1.081
160	ALBANY-SCHENECTADY-TROY, NY	1.088	1.003	0.918	2.109	1.081
3320	HONOLULU, HI	1.066	1.014	1.338	1.071	1.078
440	ANN ARBOR, MI	1.064	1.086	1.182	1.253	1.077
2670	FORT COLLINS-LOVELAND, CO	1.127	1.062	1.054	0.669	1.076
2080	DENVER, CO	1.107	1.054	1.162	0.669	1.074
5120	MINNEAPOLIS-ST PAUL, MN-WI	1.104	1.038	1.128	0.755	1.070
5523	NEW LONDON-NORWICH, CT-RI	1.086	1.008	1.178	0.963	1.068
80	AKRON, OH	1.143	1.047	0.914	0.623	1.067
6160	PHILADELPHIA, PA-NJ	1.089	1.056	1.035	1.076	1.065
1145	BRAZORIA, TX	1.117	1.072	1.057	0.475	1.065
.	Hawaii	1.042	1.060	1.279	1.071	1.065
4040	LANSING-EAST LANSING, MI	1.085	1.057	0.961	1.253	1.062
7120	SALINAS-SEASIDE-MONTEREY, CA	1.023	1.005	1.221	1.649	1.059
3520	JACKSON, MI	1.108	0.970	0.902	1.253	1.056
1680	CLEVELAND, OH	1.115	1.057	0.953	0.623	1.056
3360	HOUSTON, TX	1.117	1.072	0.943	0.475	1.053
5080	MILWAUKEE, WI	1.093	1.078	0.997	0.610	1.051
6120	PEORIA, IL	1.032	1.098	1.059	1.341	1.051
1400	CHAMPAIGN-URBANA-RANTOUL, IL	1.108	0.894	0.916	1.341	1.050
6200	PHOENIX, AZ	1.056	0.957	1.153	1.208	1.049
2975	GLENS FALLS, NY	1.051	0.941	0.874	2.109	1.047
4520	LOUISVILLE, KY-IN	1.136	0.971	0.800	0.673	1.042
7040	ST LOUIS, MO-IL	1.100	0.996	0.934	0.714	1.040
3840	KNOXVILLE, TN	1.152	0.937	0.840	0.354	1.039
8200	TACOMA, WA	1.058	1.061	0.975	0.957	1.038
1960	DAVENPORT-ROCK ISLAND-MOLINE, I	1.080	1.019	1.007	0.679	1.038
6960	SAGINAW-BAY CITY-MIDLAND, MI	1.030	1.157	0.884	1.253	1.036
2840	FRESNO, CA	1.003	1.025	1.019	1.649	1.030
8160	SYRACUSE, NY	1.015	0.977	0.859	2.109	1.029
2760	FORT WAYNE, IN	1.104	1.009	0.859	0.515	1.029
6680	READING, PA	1.091	0.873	0.918	1.076	1.028
3720	KALAMAZOO, MI	1.042	1.023	0.912	1.253	1.027
1080	BOISE CITY,IDAHO	1.051	0.964	1.067	0.843	1.026
3640	JERSEY CITY, NJ	1.000	1.093	1.037	1.138	1.022
1280	BUFFALO, NY	0.994	0.970	0.884	2.109	1.019
5960	ORLANDO, FL	1.032	0.887	1.044	1.353	1.019
8120	STOCKTON, CA	0.973	1.072	1.002	1.649	1.018
7160	SALT LAKE CITY-OGDEN, UT	1.056	1.000	0.976	0.613	1.016
5700	NIAGARA FALLS, NY	0.994	0.970	0.848	2.109	1.016

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
3000	GRAND RAPIDS, MI	1.046	0.996	0.816	1.253	1.015
240	ALLENTOWN-BETHLEHEM, PA-NJ	1.042	0.985	0.909	1.076	1.015
870	BENTON HARBOR, MI	1.003	1.092	0.912	1.253	1.015
1900	CUMBERLAND,MD-W VA	1.108	0.870	0.791	0.781	1.014
6280	PITTSBURGH, PA	1.027	1.006	0.943	1.076	1.013
1360	CEDAR RAPIDS, IA	1.051	0.978	0.980	0.679	1.013
8960	WEST PALM BEACH-BOCA RATON-DELR	1.009	0.922	1.049	1.353	1.011
5560	NEW ORLEANS, LA	1.023	0.981	1.094	0.747	1.011
4440	LORAIN-ELYRIA, OH	1.051	1.035	0.901	0.623	1.011
6440	PORTLAND, OR	1.003	1.072	1.010	0.902	1.010
4150	LAWRENCE, KS	1.051	0.926	0.983	0.791	1.010
4890	MEDFORD, OR	1.023	0.940	1.074	0.902	1.009
2000	DAYTON-SPRINGFIELD, OH	1.064	1.016	0.833	0.623	1.008
6880	ROCKFORD, IL	1.009	0.966	0.961	1.341	1.008
845	BEAVER COUNTY, PA	1.027	1.006	0.894	1.076	1.008
8520	TUCSON, AZ	0.981	0.988	1.103	1.208	1.005
1480	CHARLESTON, WV	1.009	1.047	1.094	0.485	1.004
2680	FORT LAUDERDALE-HOLLYWOOD-POMPA	0.944	0.986	1.227	1.353	1.002
8680	UTICA-ROME, NY	1.003	0.902	0.763	2.109	1.002
.	Maryland	1.051	0.923	0.894	0.781	1.000
8050	STATE COLLEGE,PA	0.994	0.959	1.049	1.076	0.999
5200	MONROE, LA	1.080	0.879	0.788	0.747	0.997
8725	VANCOUVER, WA	1.003	1.072	0.859	0.957	0.996
.	California	0.966	0.938	1.019	1.649	0.996
5320	MUSKEGON, MI	1.009	1.014	0.803	1.253	0.996
760	BATON ROUGE, LA	1.019	0.950	0.993	0.747	0.994
9040	WICHITA, KS	0.990	1.073	0.960	0.791	0.993
2400	EUGENE-SPRINGFIELD, OR	0.988	0.966	1.081	0.902	0.993
3240	HARRISBURG-LEBANON-CARLISLE, PA	0.977	1.044	0.961	1.076	0.992
6600	RACINE, WI	1.014	1.021	0.946	0.610	0.992
.	Washington	1.016	0.938	0.921	0.957	0.990
6483	PROVIDENCE-PAWTUCKET-WOONSOCKET	1.018	0.940	0.971	0.707	0.989
6453	PORTSMOUTH-DOVER-ROCHESTER,NH	0.994	0.896	1.197	0.549	0.986
2960	GARY-HAMMOND, IN	0.966	1.166	0.987	0.515	0.986
6640	RALEIGH-DURHAM, NC	1.028	0.951	0.978	0.399	0.986
1620	CHICO, CA	0.924	1.063	0.978	1.649	0.986
3500	IOWA CITY, IA	1.003	0.943	1.029	0.679	0.985
5800	ODESSA, TX	1.023	0.880	1.077	0.475	0.985
9280	YORK, PA	1.009	0.926	0.884	1.076	0.985
7760	SIOUX FALLS, SD	1.023	0.948	0.889	0.746	0.985
200	ALBUQUERQUE, NM	0.998	0.935	1.037	0.750	0.984
6080	PENSACOLA, FL	1.003	0.882	0.872	1.353	0.984
840	BEAUMONT-PORT ARTHUR, TX	1.023	0.940	0.958	0.475	0.982
7800	SOUTH BEND-MISHAWAKA, IN	1.038	0.954	0.838	0.515	0.981
8780	VISALIA-TULARE-PORTERVILLE, CA	0.924	0.958	1.077	1.649	0.981
2240	DULUTH, MN-WI	0.985	1.033	0.894	0.755	0.977
3480	INDIANAPOLIS, IN	1.016	0.994	0.859	0.515	0.977
2335	ELMIRA, NY	0.924	0.972	0.847	2.109	0.975
3880	LAFAYETTE, LA	0.994	0.913	0.993	0.747	0.975

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
7880	SPRINGFIELD, IL	0.952	0.949	0.965	1.341	0.974
2200	DUBUQUE, IA	1.003	0.943	0.906	0.679	0.973
2440	EVANSVILLE, IN-KY	1.009	0.993	0.859	0.515	0.973
4360	LINCOLN, NE	1.028	0.896	0.907	0.443	0.972
.	Wyoming	1.009	1.045	0.758	0.582	0.972
1640	CINCINNATI, OH-KY-IN	0.984	1.062	0.842	0.623	0.970
1040	BLOOMINGTON-NORMAL, IL	0.938	1.002	0.941	1.341	0.970
3660	JOHNSON CITY-KINGSPORT-BRISTOL,	1.051	0.913	0.764	0.354	0.970
1920	DALLAS, TX	0.986	0.982	0.968	0.475	0.968
2800	FORT WORTH-ARLINGTON, TX	0.986	0.982	0.968	0.475	0.968
5720	NORFOLK-VIRGINIA BEACH-NEWPORT	0.986	0.961	0.963	0.577	0.968
1303	BURLINGTON, VT	0.966	0.915	1.178	0.438	0.967
5483	NEW HAVEN-WEST HAVEN-WATERBURY-	0.924	0.996	1.101	0.963	0.965
2120	DES MOINES, IA	0.971	0.965	0.976	0.679	0.964
880	BILLINGS, MT	0.966	0.929	1.029	0.735	0.964
1720	COLORADO SPRINGS, CO	0.988	0.923	0.916	0.669	0.961
3080	GREEN BAY, WI	0.994	0.969	0.830	0.610	0.961
.	Connecticut	0.916	0.991	1.109	0.963	0.960
8600	TUSCALOOSA, AL	0.994	0.919	0.830	0.722	0.958
6403	PORTLAND, ME	0.938	0.954	1.061	0.820	0.958
.	Michigan	0.950	0.966	0.808	1.253	0.955
640	AUSTIN, TX	0.971	0.890	1.056	0.475	0.955
4000	LANCASTER, PA	0.933	0.947	0.980	1.076	0.954
4720	MADISON, WI	0.941	1.034	0.951	0.610	0.952
8280	TAMPA-ST. PETERSBURG-CLEAR, FL	0.919	0.923	0.965	1.353	0.951
780	BATTLE CREEK, MI	0.909	1.089	0.822	1.253	0.951
1000	BIRMINGHAM, AL	0.968	0.954	0.859	0.722	0.951
1840	COLUMBUS, OH	0.952	0.989	0.909	0.623	0.948
3400	HUNTINGTON-ASHLAND,WV-KY-OH	0.994	0.853	0.897	0.485	0.947
.	New York	0.890	0.933	0.811	2.109	0.946
6323	PITTSFIELD, MA	0.924	0.965	0.968	0.947	0.946
.	Massachusetts	0.907	0.974	1.035	0.947	0.945
8003	SPRINGFIELD,MA	0.893	0.991	1.086	0.947	0.945
.	Nevada	0.881	1.045	1.076	0.947	0.944
8400	TOLEDO, OH	0.947	1.028	0.843	0.623	0.944
7840	SPOKANE, WA	0.918	0.964	0.975	0.957	0.944
3760	KANSAS CITY, MO-KS	0.927	1.001	0.943	0.714	0.942
1260	BRYAN-COLLEGE STATION, TX	0.938	0.883	1.126	0.475	0.942
3740	KANKAKEE, IL	0.909	0.939	0.906	1.341	0.941
2360	ERIE, PA	0.896	1.021	0.939	1.076	0.940
2900	GAINESVILLE, FL	0.932	0.813	0.931	1.353	0.939
7610	SHARON,PA	0.909	0.976	0.870	1.076	0.934
6015	PANAMA CITY, FL	0.966	0.748	0.781	1.353	0.933
2700	FORT MYERS-CAPE CORAL, FL	0.881	0.851	1.099	1.353	0.933
400	ANDERSON, IN	0.966	0.928	0.793	0.515	0.932
8940	WAUSAU, WI	0.938	0.978	0.830	0.610	0.930
2750	FORT WALTON BEACH, FL	0.966	0.752	0.734	1.353	0.929
8640	TYLER, TX	0.938	0.917	0.955	0.475	0.929
7680	SHREVEPORT, LA	0.928	0.920	0.897	0.747	0.928

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
520	ATLANTA, GA	0.885	1.007	1.035	0.670	0.927
1440	CHARLESTON, SC	0.938	0.918	0.918	0.521	0.927
4280	LEXINGTON-FAYETTE, KY	0.924	0.916	0.944	0.673	0.927
560	ATLANTIC CITY, NJ	0.833	1.055	1.093	1.138	0.927
9200	WILMINGTON, NC	0.966	0.898	0.816	0.399	0.926
.	Arizona	0.893	0.979	0.825	1.208	0.925
2880	GADSDEN, AL	0.966	0.898	0.678	0.722	0.922
8560	TULSA, OK	0.914	0.925	1.015	0.460	0.922
9320	YOUNGSTOWN-WARREN, OH	0.896	1.063	0.847	0.623	0.920
6520	PROVO-OREM, UT	0.944	0.870	0.845	0.613	0.920
1520	CHARLOTTE-GASTONIA-ROCK HILL, N	0.932	0.913	0.897	0.399	0.917
4800	MANSFIELD, OH	0.924	0.981	0.766	0.623	0.916
.	Illinois	0.892	0.916	0.790	1.341	0.916
5920	OMAHA, NE-IA	0.914	0.973	0.892	0.443	0.916
3960	LAKE CHARLES, LA	0.909	0.982	0.785	0.747	0.914
3200	HAMILTON-MIDDLETOWN, OH	0.881	1.008	0.944	0.623	0.914
500	ATHENS, GA	0.938	0.833	0.840	0.670	0.912
7640	SHERMAN-DENISON, TX	0.938	0.883	0.830	0.475	0.911
7620	SHEBOYGAN, WI	0.909	0.948	0.848	0.610	0.911
860	BELLINGHAM, WA	0.824	1.075	1.022	0.957	0.911
5403	NEW BEDFORD-FALL RIVER-ATTLEBOR	0.881	0.899	0.956	0.947	0.911
9243	WORCESTER-FITCHBURG-LEOMINSTER,	0.846	0.940	1.086	0.947	0.910
3920	LAFAYETTE, IN	0.924	0.847	0.923	0.515	0.909
5360	NASHVILLE, TN	0.900	0.906	0.998	0.354	0.906
2520	FARGO-MOORHEAD, ND-MN	0.881	0.961	0.918	0.680	0.906
1540	CHARLOTTESVILLE, VA	0.861	0.955	1.059	0.577	0.905
2020	DAYTONA BEACH, FL	0.852	0.817	1.034	1.353	0.905
5880	OKLAHOMA CITY, OK	0.873	0.980	0.985	0.460	0.904
1880	CORPUS CHRISTI, TX	0.896	0.887	0.980	0.475	0.903
6800	ROANOKE, VA	0.909	0.901	0.850	0.577	0.903
1140	BRADENTON, FL	0.810	0.939	1.069	1.353	0.902
4400	LITTLE ROCK-NORTH LITTLE ROCK,	0.888	0.987	0.926	0.271	0.900
3120	GREENSBORO-WINSTON-SALEM-HIGH P	0.905	0.937	0.854	0.399	0.900
9080	WICHITA FALLS, TX	0.909	0.895	0.860	0.475	0.900
.	Oregon	0.836	0.987	0.983	0.902	0.899
4920	MEMPHIS, TN-AR-MS	0.899	0.971	0.833	0.354	0.898
600	AUGUSTA, GA-SC	0.881	0.956	0.840	0.670	0.897
7510	SARASOTA, FL	0.796	0.902	1.157	1.353	0.897
1760	COLUMBIA, SC	0.885	0.906	0.928	0.521	0.896
8240	TALLAHASSEE, FL	0.839	0.897	0.916	1.353	0.896
1300	BURLINGTON, NC	0.903	0.913	0.810	0.399	0.891
3160	GREENVILLE-SPARTANBURG, SC	0.902	0.887	0.811	0.521	0.891
8440	TOPEKA, KS	0.867	0.903	0.892	0.791	0.891
2560	FAYETTEVILLE, NC	0.909	0.891	0.781	0.399	0.888
.	Montana	0.881	0.880	0.833	0.735	0.888
5160	MOBILE, AL	0.881	0.840	0.892	0.722	0.887
450	ANNISTON, AL	0.881	0.952	0.734	0.722	0.887
.	Utah	0.858	0.913	0.924	0.613	0.884
7720	SIOUX CITY, IA-NE	0.881	0.835	0.884	0.679	0.884

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
1800	COLUMBUS, GA-AL	0.902	0.841	0.758	0.670	0.884
6760	RICHMOND-PETERSBURG, VA	0.841	0.962	0.953	0.577	0.883
3600	JACKSONVILLE, FL	0.796	0.939	0.975	1.353	0.883
7080	SALEM, OR	0.786	1.051	1.012	0.902	0.883
460	APPLETON-OSHKOSH-NEENAH, WI	0.852	0.986	0.830	0.610	0.882
3560	JACKSON, MS	0.833	0.889	1.005	0.764	0.880
7240	SAN ANTONIO, TX	0.867	0.886	0.918	0.475	0.880
1320	CANTON, OH	0.846	1.016	0.798	0.623	0.879
1560	CHATTANOOGA, TN-GA	0.852	0.935	0.911	0.354	0.874
2720	FORT SMITH, AR-OK	0.881	0.935	0.779	0.271	0.874
8800	WACO, TX	0.896	0.835	0.768	0.475	0.874
7560	SCRANTON-WILKES BARRE, PA	0.844	0.906	0.747	1.076	0.873
4640	LYNCHBURG, VA	0.852	0.900	0.872	0.577	0.873
2040	DECATUR, IL	0.767	1.015	0.916	1.341	0.872
3980	LAKELAND-WINTER HAVEN, FL	0.796	0.913	0.880	1.353	0.870
280	ALTOONA, PA	0.824	0.911	0.815	1.076	0.869
.	New Mexico	0.861	0.871	0.768	0.750	0.869
.	Pennsylvania	0.826	0.932	0.768	1.076	0.869
3290	HICKORY, NC	0.881	0.880	0.747	0.399	0.867
5280	MUNCIE, IN	0.872	0.888	0.746	0.515	0.867
8920	WATERLOO-CEDAR FALLS, IA	0.774	1.063	0.983	0.679	0.866
7520	SAVANNAH, GA	0.833	0.920	0.855	0.670	0.866
3680	JOHNSTOWN, PA	0.817	0.929	0.793	1.076	0.866
320	AMARILLO, TX	0.839	0.958	0.833	0.475	0.866
5240	MONTGOMERY, AL	0.840	0.913	0.793	0.722	0.864
.	Colorado	0.816	0.930	0.909	0.669	0.863
9260	YAKIMA, WA	0.782	0.978	0.933	0.957	0.863
40	ABILENE, TX	0.843	0.856	0.907	0.475	0.861
3060	GREELEY, CO	0.796	0.989	0.912	0.669	0.860
3810	KILLEEN-TEMPLE, TX	0.839	0.917	0.827	0.475	0.859
8080	STEUBENVILLE-WEIRTON, OH-WV	0.767	1.039	0.971	0.623	0.856
9140	WILLIAMSPORT, PA	0.796	0.933	0.793	1.076	0.854
4600	LUBBOCK, TX	0.843	0.879	0.806	0.475	0.854
4420	LONGVIEW-MARSHALL, TX	0.824	0.855	0.943	0.475	0.854
.	Idaho	0.817	0.842	0.864	0.843	0.852
.	Tennessee	0.881	0.821	0.694	0.354	0.851
8750	VICTORIA, TX	0.796	0.790	1.165	0.475	0.851
.	Wisconsin	0.827	0.901	0.764	0.610	0.848
.	Virginia	0.841	0.843	0.773	0.577	0.848
1240	BROWNSVILLE-HARLINGEN, TX	0.833	0.831	0.848	0.475	0.846
2290	EAU CLAIRE, WI	0.796	0.952	0.823	0.610	0.844
.	Minnesota	0.808	0.886	0.793	0.755	0.843
6560	PUEBLO, CO	0.767	0.981	0.909	0.669	0.843
.	West Virginia	0.836	0.862	0.754	0.485	0.843
.	Kentucky	0.833	0.861	0.710	0.673	0.842
2340	ENID, OK	0.796	0.881	0.934	0.460	0.840
1740	COLUMBIA, MO	0.786	0.879	0.901	0.714	0.840
4320	LIMA, OH	0.774	0.982	0.847	0.623	0.839
480	ASHEVILLE, NC	0.810	0.883	0.816	0.399	0.834

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
2650	FLORENCE, AL	0.810	0.827	0.774	0.722	0.833
3710	JOPLIN, MO	0.833	0.790	0.695	0.714	0.832
4763	MANCHESTER-NASHUA, NH	0.725	0.864	1.236	0.549	0.831
.	Ohio	0.788	0.912	0.795	0.623	0.831
7000	ST JOSEPH, MO	0.796	0.877	0.737	0.714	0.827
.	Delaware	0.796	0.820	0.862	0.552	0.826
3620	JANESVILLE-BELOIT, WI	0.739	0.989	0.918	0.610	0.826
.	New Hampshire	0.756	0.865	1.011	0.549	0.826
4200	LAWTON, OK	0.796	0.875	0.803	0.460	0.825
.	Indiana	0.803	0.870	0.746	0.515	0.825
7920	SPRINGFIELD, MO	0.782	0.881	0.773	0.714	0.824
.	Florida	0.782	0.810	0.655	1.353	0.824
.	Iowa	0.782	0.850	0.786	0.679	0.820
6980	ST CLOUD, MN	0.730	0.939	0.918	0.755	0.819
220	ALEXANDRIA, LA	0.767	0.878	0.791	0.747	0.818
.	Louisiana	0.791	0.876	0.638	0.747	0.816
3605	JACKSONVILLE, NC	0.824	0.730	0.776	0.399	0.815
2320	EL PASO, TX	0.782	0.832	0.838	0.475	0.815
8360	TEXARKANA, TX-TEXARKANA, AR	0.758	0.978	0.766	0.475	0.815
6240	PINE BLUFF, AR	0.796	0.872	0.773	0.271	0.815
2655	FLORENCE, SC	0.782	0.879	0.753	0.521	0.815
4680	MACON-WARNER ROBINS, GA	0.739	0.932	0.842	0.670	0.812
4080	LAREDO, TX	0.796	0.784	0.783	0.475	0.810
.	Alabama	0.790	0.856	0.620	0.722	0.809
.	North Dakota	0.776	0.794	0.779	0.680	0.807
9000	WHEELING, WV-OH	0.748	0.860	0.843	0.485	0.801
.	Oklahoma	0.776	0.878	0.660	0.460	0.800
.	North Carolina	0.775	0.838	0.732	0.399	0.799
405	ANDERSON, SC	0.739	0.937	0.741	0.521	0.797
1660	CLARKSVILLE-HOPKINSVILL, TN-KY	0.739	0.880	0.842	0.354	0.794
3180	HAGERSTOWN, MD	0.668	0.997	0.921	0.781	0.793
.	Vermont	0.730	0.858	0.891	0.438	0.793
4880	MCALLEN-EDINBURG-MISSION, TX	0.767	0.731	0.845	0.475	0.793
120	ALBANY, GA	0.719	0.878	0.811	0.670	0.790
1950	DANVILLE, VA	0.739	0.808	0.808	0.577	0.787
.	Kansas	0.725	0.872	0.721	0.791	0.787
920	BILOXI-GULFPORT, MS	0.703	0.854	0.791	0.764	0.779
.	Georgia	0.734	0.824	0.677	0.670	0.777
6020	PARKERSBURG-MARIETTA, WV-OH	0.668	0.987	0.833	0.485	0.772
.	Texas	0.733	0.808	0.717	0.475	0.771
2580	FAYETTEVILLE-SPRINGDALE, AR	0.730	0.806	0.801	0.271	0.770
8320	TERRE HAUTE, IN	0.717	0.812	0.764	0.515	0.769
.	Mississippi	0.719	0.797	0.667	0.764	0.767
2330	ELKHART-GOSHEN, IN	0.653	0.989	0.835	0.515	0.765
733	BANGOR, ME	0.640	0.887	0.918	0.820	0.762
.	Missouri	0.705	0.809	0.682	0.714	0.760
.	Nebraska	0.713	0.814	0.719	0.443	0.759
.	South Carolina	0.699	0.850	0.682	0.521	0.756
.	Maine	0.639	0.883	0.867	0.820	0.756

MSA Code	Name	Physicians' Own Time	Employee Wages	Office Rent	Malpractice Insurance	Basic GMEI
4243	LEWISTON-AUBURN, ME	0.640	0.890	0.825	0.820	0.753
.	Arkansas	0.715	0.808	0.653	0.271	0.747
.	South Dakota	0.671	0.780	0.729	0.746	0.742
5790	OCALA, FL	0.540	0.866	0.811	1.353	0.709
.	Rhode Island	.	.	0.987	0.707	.
1010	BISMARK, ND	.	.	0.921	0.680	.
1020	BLOOMINGTON, IN	.	.	0.855	0.515	.
1350	CASPER, WY	.	.	1.178	0.582	.
2180	DOTHAN, AL	.	.	0.855	0.722	.
2710	FORT PIERCE, FL	.	.	1.099	1.353	.
2985	GRAND FORKS, ND	.	.	0.875	0.680	.
3040	GREAT FALLS, MT	.	.	0.887	0.735	.
3350	HOUMA-THIBODAUX,LA	.	.	0.879	0.747	.
3870	LA CROSSE, WI	.	.	0.978	0.610	.
4100	LAS CRUCES, NM	.	.	0.823	0.750	.
5345	NAPLES, FL	.	.	1.128	1.353	.
5990	OWENSBORO, KY	.	.	0.870	0.673	.
6820	ROCHESTER, MN	.	.	0.963	0.755	.
7490	SANTA FE, NM	.	.	1.207	0.750	.

Note: State values shown are for rural areas.

APPENDIX C

Alternative GMEIs

Appendix C. Alternative GMEIs

MSA Code	Name	Basic GMEI	NORC Weights	Managerial & Professional Price Proxy	Pass-Through	Floor
40	ABILENE, TX	0.861	0.857	0.833	0.885	0.892
80	AKRON, OH	1.067	1.073	1.057	0.963	1.039
120	ALBANY, GA	0.790	0.792	0.800	0.885	0.892
160	ALBANY-SCHENECTADY-TROY, NY	1.081	1.098	1.063	1.071	1.055
200	ALBUQUERQUE, NM	0.984	0.980	0.973	0.966	0.960
220	ALEXANDRIA, LA	0.818	0.822	0.867	0.886	0.893
240	ALLENTOWN-BETHLEHEM, PA-NJ	1.015	1.022	1.035	0.978	0.990
280	ALTOONA, PA	0.869	0.877	0.836	0.930	0.912
320	AMARILLO, TX	0.866	0.868	0.889	0.901	0.899
360	ANAHEIM-SANTA ANA,CA	1.278	1.267	1.257	1.240	1.246
380	ANCHORAGE, AK	1.424	1.422	1.422	1.292	1.387
400	ANDERSON, IN	0.932	0.937	0.886	0.884	0.908
405	ANDERSON, SC	0.797	0.803	0.878	0.875	0.888
440	ANN ARBOR, MI	1.077	1.075	1.072	1.093	1.051
450	ANNISTON, AL	0.887	0.897	0.940	0.895	0.897
460	APPLETON-OSHKOSH-NEENAH, WI	0.882	0.887	0.937	0.921	0.908
480	ASHEVILLE, NC	0.834	0.834	0.873	0.865	0.884
500	ATHENS, GA	0.912	0.912	0.871	0.876	0.889
520	ATLANTA, GA	0.927	0.924	0.972	0.983	0.934
560	ATLANTIC CITY, NJ	0.927	0.925	0.938	1.052	0.964
600	AUGUSTA, GA-SC	0.897	0.901	0.886	0.918	0.907
620	AURORA-ELGIN, IL	1.098	1.097	1.125	1.133	1.072
640	AUSTIN, TX	0.955	0.945	0.930	0.932	0.931
680	BAKERSFIELD, CA	1.086	1.087	1.117	1.067	1.059
720	BALTIMORE, MD	1.090	1.089	1.065	1.025	1.062
733	BANGOR, ME	0.762	0.759	0.815	0.926	0.910
760	BATON ROUGE, LA	0.994	0.993	1.009	0.959	0.970
780	BATTLE CREEK, MI	0.951	0.966	0.980	1.007	0.944
840	BEAUMONT-PORT ARTHUR, TX	0.982	0.979	1.006	0.925	0.957
845	BEAVER COUNTY, PA	1.008	1.017	1.036	0.981	0.983
860	BELLINGHAM, WA	0.911	0.912	1.080	1.026	0.953
870	BENTON HARBOR, MI	1.015	1.027	1.051	1.030	0.991
875	BERGEN-PASSAIC, NJ	1.156	1.142	1.146	1.203	1.129
880	BILLINGS, MT	0.964	0.959	0.922	0.960	0.940
920	BILOXI-GULFPORT, MS	0.779	0.781	0.826	0.879	0.890
960	BINGHAMTON, NY	1.195	1.217	1.078	1.023	1.163
1000	BIRMINGHAM, AL	0.951	0.955	0.967	0.926	0.927
1010	BISMARK, ND	.	.	.	.	.
1020	BLOOMINGTON, IN	.	.	.	.	.
1040	BLOOMINGTON-NORMAL, IL	0.970	0.978	0.975	1.013	0.947
1080	BOISE CITY,IDAHO	1.026	1.022	1.008	0.990	1.000
1123	BOSTON-LOWELL-BROCKTON-LAWRENCE	1.085	1.065	1.075	1.136	1.060
1125	BOULDER-LONGMONT, CO	1.084	1.073	1.087	1.053	1.058
1140	BRADENTON, FL	0.902	0.900	0.884	1.024	0.952
1145	BRAZORIA, TX	1.065	1.063	1.076	0.994	1.038
1150	BREMERTON, WA	1.115	1.120	1.057	1.034	1.086
1163	BRIDGEPORT-STAMFORD-NORWALK-DAN	1.082	1.072	1.120	1.089	1.056
1240	BROWNSVILLE-HARLINGEN, TX	0.846	0.843	0.863	0.862	0.883
1260	BRYAN-COLLEGE STATION, TX	0.942	0.928	0.939	0.947	0.919
1280	BUFFALO, NY	1.019	1.036	1.023	1.052	0.995
1300	BURLINGTON, NC	0.891	0.893	0.900	0.874	0.888
1303	BURLINGTON, VT	0.967	0.952	0.956	0.968	0.944
1320	CANTON, OH	0.879	0.887	0.926	0.924	0.909

MSA Code	Name	Basic GMEI	NORC Weights	Managerial & Professional Price Proxy	Pass-Through	Floor
1350	CASPER, WY	.	.	.	.	.
1360	CEDAR RAPIDS, IA	1.013	1.013	1.011	0.960	0.987
1400	CHAMPAIGN-URBANA-RANTOUL, IL	1.050	1.057	1.005	0.970	1.023
1440	CHARLESTON, SC	0.927	0.925	0.901	0.912	0.904
1480	CHARLESTON, WV	1.004	0.998	0.968	0.996	0.979
1520	CHARLOTTE-GASTONIA-ROCK HILL, N	0.917	0.915	0.908	0.895	0.897
1540	CHARLOTTESVILLE, VA	0.905	0.898	0.834	0.964	0.926
1560	CHATTANOOGA, TN-GA	0.874	0.871	0.916	0.902	0.900
1600	CHICAGO, IL	1.095	1.095	1.121	1.125	1.069
1620	CHICO, CA	0.986	0.996	0.945	1.068	0.971
1640	CINCINNATI, OH-KY-IN	0.970	0.979	1.028	0.951	0.946
1660	CLARKSVILLE-HOPKINSVILL, TN-KY	0.794	0.791	0.779	0.867	0.885
1680	CLEVELAND, OH	1.056	1.060	1.064	0.976	1.029
1720	COLORADO SPRINGS, CO	0.961	0.962	0.922	0.925	0.937
1740	COLUMBIA, MO	0.840	0.838	0.804	0.910	0.903
1760	COLUMBIA, SC	0.896	0.893	0.914	0.910	0.903
1800	COLUMBUS, GA-AL	0.884	0.889	0.876	0.859	0.881
1840	COLUMBUS, OH	0.948	0.951	0.952	0.942	0.925
1880	CORPUS CHRISTI, TX	0.903	0.897	0.924	0.913	0.904
1900	CUMBERLAND,MD-W VA	1.014	1.021	0.852	0.886	0.987
1920	DALLAS, TX	0.968	0.966	1.000	0.942	0.944
1950	DANVILLE, VA	0.787	0.786	0.807	0.852	0.878
1960	DAVENPORT-ROCK ISLAND-MOLINE, I	1.038	1.038	1.091	0.981	1.012
2000	DAYTON-SPRINGFIELD, OH	1.008	1.016	0.994	0.933	0.982
2020	DAYTONA BEACH, FL	0.905	0.900	0.870	0.974	0.930
2040	DECATUR, IL	0.872	0.879	0.905	1.012	0.947
2080	DENVER, CO	1.074	1.068	1.078	1.030	1.048
2120	DES MOINES, IA	0.964	0.963	0.978	0.955	0.941
2160	DETROIT, MI	1.196	1.213	1.183	1.075	1.165
2180	DOTHAN, AL	.	.	.	.	.
2200	DUBUQUE, IA	0.973	0.975	0.926	0.930	0.948
2240	DULUTH, MN-WI	0.977	0.983	0.926	0.964	0.953
2290	EAU CLAIRE, WI	0.844	0.847	0.876	0.907	0.902
2320	EL PASO, TX	0.815	0.813	0.835	0.860	0.882
2330	ELKHART-GOSHEN, IN	0.765	0.767	0.783	0.915	0.905
2335	ELMIRA, NY	0.975	0.993	0.973	1.043	0.960
2340	ENID, OK	0.840	0.834	0.826	0.898	0.898
2360	ERIE, PA	0.940	0.945	1.006	0.998	0.941
2400	EUGENE-SPRINGFIELD, OR	0.993	0.989	0.988	0.999	0.969
2440	EVANSVILLE, IN-KY	0.973	0.977	0.977	0.922	0.948
2520	FARGO-MOORHEAD, ND-MN	0.906	0.907	0.875	0.939	0.916
2560	FAYETTEVILLE, NC	0.888	0.891	0.866	0.859	0.882
2580	FAYETTEVILLE-SPRINGDALE, AR	0.770	0.767	0.776	0.825	0.867
2640	FLINT, MI	1.232	1.255	1.199	1.071	1.199
2650	FLORENCE, AL	0.833	0.836	0.834	0.862	0.883
2655	FLORENCE, SC	0.815	0.819	0.809	0.858	0.881
2670	FORT COLLINS-LOVELAND, CO	1.076	1.076	0.987	1.006	1.049
2680	FORT LAUDERDALE-HOLLYWOOD-POMPA	1.002	0.995	1.024	1.079	0.979
2700	FORT MYERS-CAPE CORAL, FL	0.933	0.927	0.905	1.002	0.942
2710	FORT PIERCE, FL	.	.	.	.	.
2720	FORT SMITH, AR-OK	0.874	0.877	0.873	0.863	0.883
2750	FORT WALTON BEACH, FL	0.929	0.939	0.891	0.879	0.906
2760	FORT WAYNE, IN	1.029	1.035	0.997	0.928	1.002

MSA Code	Name	Basic GMEI	NORC Weights	Managerial & Professional Price Proxy	Pass-Through	Floor
2800	FORT WORTH-ARLINGTON, TX	0.968	0.966	1.000	0.942	0.944
2840	FRESNO, CA	1.030	1.038	1.000	1.065	1.006
2880	GADSDEN, AL	0.922	0.934	0.918	0.863	0.899
2900	GAINESVILLE, FL	0.939	0.941	0.899	0.948	0.919
2920	GALVESTON-TEXAS CITY, TX	1.155	1.156	1.093	0.950	1.123
2960	GARY-HAMMOND, IN	0.986	0.990	1.023	1.013	0.963
2975	GLENS FALLS, NY	1.047	1.063	0.994	1.039	1.021
2985	GRAND FORKS, ND	.	.	.	.	.
3000	GRAND RAPIDS, MI	1.015	1.029	0.989	0.973	0.990
3040	GREAT FALLS, MT	.	.	.	.	.
3060	GREELEY, CO	0.860	0.861	0.840	0.947	0.919
3080	GREEN BAY, WI	0.961	0.967	0.933	0.915	0.937
3120	GREENSBORO-WINSTON-SALEM-HIGH P	0.900	0.901	0.903	0.892	0.896
3160	GREENVILLE-SPARTANBURG, SC	0.891	0.893	0.945	0.875	0.888
3180	HAGERSTOWN, MD	0.793	0.794	0.822	0.961	0.925
3200	HAMILTON-MIDDLETOWN, OH	0.914	0.914	1.050	0.957	0.923
3240	HARRISBURG-LEBANON-CARLISE, PA	0.992	0.998	0.974	1.011	0.968
3283	HARTFORD-MIDDLETOWN-NEW BRITAIN	1.083	1.079	1.087	1.060	1.056
3290	HICKORY, NC	0.867	0.871	0.983	0.847	0.876
3320	HONOLULU, HI	1.078	1.065	1.005	1.092	1.052
3350	HOUMA-THIBODAUX,LA	.	.	.	.	.
3360	HOUSTON, TX	1.053	1.057	1.064	0.966	1.026
3400	HUNTINGTON-ASHLAND,WV-KY-OH	0.947	0.944	1.125	0.882	0.923
3440	HUNTSVILLE, AL	1.087	1.092	1.052	0.906	1.058
3480	INDIANAPOLIS, IN	0.977	0.981	0.996	0.923	0.952
3500	IOWA CITY, IA	0.985	0.981	0.938	0.960	0.961
3520	JACKSON, MI	1.056	1.066	1.055	0.986	1.029
3560	JACKSON, MS	0.880	0.874	0.942	0.943	0.917
3600	JACKSONVILLE, FL	0.883	0.886	0.967	1.001	0.942
3605	JACKSONVILLE, NC	0.815	0.812	0.817	0.803	0.858
3620	JANESVILLE-BELOIT, WI	0.826	0.826	0.825	0.943	0.917
3640	JERSEY CITY, NJ	1.022	1.027	0.976	1.051	0.998
3660	JOHNSON CITY-KINGSPORT-BRISTOL,	0.970	0.975	0.930	0.859	0.944
3680	JOHNSTOWN, PA	0.866	0.875	0.846	0.931	0.912
3690	JOLIET, IL	1.098	1.097	1.125	1.133	1.072
3710	JOPLIN, MO	0.832	0.838	0.843	0.830	0.869
3720	KALAMAZOO, MI	1.027	1.037	1.015	1.006	1.002
3740	KANKAKEE, IL	0.941	0.948	1.000	0.983	0.934
3760	KANSAS CITY, MO-KS	0.942	0.944	0.957	0.962	0.925
3800	KENOSHA, WI	1.128	1.135	1.053	1.000	1.098
3810	KILLEEN-TEMPLE, TX	0.859	0.860	0.882	0.885	0.893
3840	KNOXVILLE, TN	1.039	1.043	1.006	0.886	1.011
3850	KOKOMO, IN	1.390	1.401	1.037	0.926	1.348
3870	LA CROSSE, WI	.	.	.	.	.
3880	LAFAYETTE, LA	0.975	0.972	0.924	0.947	0.950
3920	LAFAYETTE, IN	0.909	0.905	0.914	0.888	0.894
3960	LAKE CHARLES, LA	0.914	0.923	0.943	0.920	0.907
3965	LAKE COUNTY, IL	1.101	1.098	1.127	1.139	1.075
3980	LAKELAND-WINTER HAVEN, FL	0.870	0.876	0.887	0.969	0.929
4000	LANCASTER, PA	0.954	0.956	0.937	0.982	0.934
4040	LANSING-EAST LANSING, MI	1.062	1.071	1.052	1.030	1.036
4080	LAREDO, TX	0.810	0.809	0.853	0.829	0.869
4100	LAS CRUCES, NM	.	.	.	.	.

MSA Code	Name	Basic GMEI	NORC Weights	Managerial & Professional Price Proxy	Pass-Through	Floor
4120	LAS VEGAS, NV	1.103	1.094	1.049	1.057	1.075
4150	LAWRENCE, KS	1.010	1.009	0.957	0.952	0.984
4200	LAWTON, OK	0.825	0.826	0.812	0.864	0.884
4243	LEWISTON-AUBURN, ME	0.753	0.755	0.806	0.904	0.901
4280	LEXINGTON-FAYETTE, KY	0.927	0.925	0.950	0.930	0.912
4320	LIMA, OH	0.839	0.842	0.861	0.925	0.909
4360	LINCOLN, NE	0.972	0.971	0.935	0.895	0.947
4400	LITTLE ROCK-NORTH LITTLE ROCK,	0.900	0.898	0.906	0.917	0.906
4420	LONGVIEW-MARSHALL, TX	0.854	0.847	0.842	0.893	0.896
4440	LORAIN-ELYRIA, OH	1.011	1.016	0.973	0.956	0.985
4480	LOS ANGELES-LONG BEACH, CA	1.246	1.243	1.189	1.199	1.215
4520	LOUISVILLE, KY-IN	1.042	1.051	1.021	0.913	1.014
4600	LUBBOCK, TX	0.854	0.855	0.851	0.868	0.885
4640	LYNCHBURG, VA	0.873	0.872	0.942	0.899	0.899
4680	MACON-WARNER ROBINS, GA	0.812	0.814	0.828	0.910	0.903
4720	MADISON, WI	0.952	0.954	0.964	0.967	0.929
4763	MANCHESTER-NASHUA, NH	0.831	0.810	0.870	0.973	0.930
4800	MANSFIELD, OH	0.916	0.925	0.906	0.905	0.901
4880	MCALLEN-EDINBURG-MISSION, TX	0.793	0.786	0.872	0.827	0.868
4890	MEDFORD, OR	1.009	1.004	1.033	0.989	0.984
4900	MELBOURNE-TITUSVILLE, FL	1.093	1.102	1.107	1.042	1.066
4920	MEMPHIS, TN-AR-MS	0.898	0.900	0.913	0.896	0.897
5000	MIAMI-HIALEAH, FL	1.094	1.088	1.046	1.085	1.067
5015	MIDDLESEX-SOMERSET-HUNTERDON, N	1.160	1.147	1.148	1.129	1.131
5040	MIDLAND, TX	1.140	1.136	1.060	0.990	1.109
5080	MILWAUKEE, WI	1.051	1.053	1.029	0.993	1.024
5120	MINNEAPOLIS-ST PAUL, MN-WI	1.070	1.065	1.062	1.023	1.043
5160	MOBILE, AL	0.887	0.886	0.917	0.896	0.897
5170	MODESTO, CA	1.100	1.106	1.064	1.078	1.073
5190	MONMOUTH-OCEAN, NJ	1.186	1.181	1.197	1.091	1.155
5200	MONROE, LA	0.997	1.004	0.933	0.885	0.971
5240	MONTGOMERY, AL	0.864	0.869	0.871	0.896	0.897
5280	MUNCIE, IN	0.867	0.872	0.881	0.859	0.882
5320	MUSKEGON, MI	0.996	1.010	0.967	0.977	0.971
5345	NAPLES, FL	.	.	.	.	.
5360	NASHVILLE, TN	0.906	0.898	0.909	0.914	0.905
5380	NASSAU-SUFFOLK, NY	1.282	1.279	1.279	1.265	1.251
5403	NEW BEDFORD-FALL RIVER-ATTLEBOR	0.911	0.910	0.910	0.950	0.920
5483	NEW HAVEN-WEST HAVEN-WATERBURY-	0.965	0.961	0.988	1.019	0.950
5523	NEW LONDON-NORWICH, CT-RI	1.068	1.062	1.043	1.042	1.042
5560	NEW ORLEANS, LA	1.011	1.006	1.008	0.995	0.986
5600	NEW YORK, NY	1.149	1.163	1.139	1.186	1.122
5640	NEWARK, NJ	1.185	1.186	1.214	1.089	1.154
5700	NIAGARA FALLS, NY	1.016	1.034	1.019	1.043	0.991
5720	NORFOLK-VIRGINIA BEACH-NEWPORT	0.968	0.966	0.888	0.942	0.944
5775	OAKLAND, CA	1.207	1.197	1.177	1.252	1.178
5790	OCALA, FL	0.709	0.715	0.934	0.937	0.915
5800	ODESSA, TX	0.985	0.975	1.025	0.934	0.960
5880	OKLAHOMA CITY, OK	0.904	0.900	0.915	0.944	0.918
5910	OLYMPIA, WA	1.137	1.139	1.062	1.021	1.107
5920	OMAHA, NE-IA	0.916	0.916	0.953	0.918	0.906
5950	ORANGE COUNTY, NY	1.090	1.101	1.104	1.083	1.063
5960	ORLANDO, FL	1.019	1.018	1.003	1.000	0.994

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5990	OWENSBORO, KY	.	.	.	.	.
6000	OXNARD-VENTURA, CA	1.214	1.202	1.223	1.228	1.185
6015	PANAMA CITY, FL	0.933	0.941	0.895	0.889	0.910
6020	PARKERSBURG-MARIETTA, WV-OH	0.772	0.774	0.863	0.912	0.904
6025	PASCAGOULA, MS	1.234	1.241	1.174	0.905	1.198
6080	PENSACOLA, FL	0.984	0.992	0.943	0.957	0.960
6120	PEORIA, IL	1.051	1.056	1.062	1.075	1.026
6160	PHILADELPHIA, PA-NJ	1.065	1.069	1.066	1.033	1.039
6200	PHOENIX, AZ	1.049	1.044	1.036	1.039	1.023
6240	PINE BLUFF, AR	0.815	0.815	0.878	0.840	0.873
6280	PITTSBURGH, PA	1.013	1.019	1.041	0.993	0.988
6323	PITTSFIELD, MA	0.946	0.947	0.962	0.975	0.931
6403	PORTLAND, ME	0.958	0.953	0.959	0.983	0.935
6440	PORTLAND, OR	1.010	1.013	1.033	1.018	0.986
6453	PORTSMOUTH-DOVER-ROCHESTER,NH	0.986	0.971	0.943	0.975	0.962
6460	POUGHKEEPSIE, NY	1.211	1.217	1.166	1.120	1.180
6483	PROVIDENCE-PAWTUCKET-WOONSOCKET	0.989	0.987	0.989	0.948	0.964
6520	PROVO-OREM, UT	0.920	0.921	0.958	0.885	0.897
6560	PUEBLO, CO	0.843	0.843	0.838	0.943	0.917
6600	RACINE, WI	0.992	0.994	1.029	0.961	0.967
6640	RALEIGH-DURHAM, NC	0.986	0.982	0.961	0.928	0.961
6680	READING, PA	1.028	1.031	1.000	0.942	1.001
6690	REDDING, CA	1.096	1.106	1.010	1.078	1.069
6720	RENO, NV	1.099	1.092	1.048	1.076	1.072
6740	RICHLAND-KENNEWICK, WA	1.132	1.126	1.110	1.049	1.103
6760	RICHMOND-PETERSBURG, VA	0.883	0.881	0.935	0.940	0.916
6780	RIVERSIDE-SAN BERNARDINO,CA	1.118	1.123	1.071	1.104	1.091
6800	ROANOKE, VA	0.903	0.905	0.937	0.894	0.896
6820	ROCHESTER, MN	.	.	.	.	.
6840	ROCHESTER, NY	1.153	1.170	1.151	1.115	1.125
6880	ROCKFORD, IL	1.008	1.014	1.037	1.006	0.984
6920	SACRAMENTO, CA	1.173	1.176	1.135	1.124	1.143
6960	SAGINAW-BAY CITY-MIDLAND, MI	1.036	1.052	1.039	1.045	1.011
6980	ST CLOUD, MN	0.819	0.818	1.020	0.938	0.915
7000	ST JOSEPH, MO	0.827	0.834	0.860	0.870	0.886
7040	ST LOUIS, MO-IL	1.040	1.044	1.023	0.958	1.013
7080	SALEM, OR	0.883	0.883	0.971	1.011	0.946
7120	SALINAS-SEASIDE-MONTEREY, CA	1.059	1.057	0.985	1.108	1.035
7160	SALT LAKE CITY-OGDEN, UT	1.016	1.016	1.003	0.961	0.990
7200	SAN ANGELO, TX	1.118	1.122	1.038	0.938	1.087
[illegible]240	SAN ANTONIO, TX	0.880	0.876	0.913	0.897	0.898
7320	SAN DIEGO, CA	1.167	1.164	1.106	1.126	1.138
7360	SAN FRANCISCO, CA	1.222	1.205	1.192	1.288	1.193
7400	SAN JOSE, CA	1.315	1.308	1.290	1.277	1.282
7480	SANTA BARBARA-SANTA MARIA-LOMPO	1.189	1.184	1.097	1.183	1.160
7485	SANTA CRUZ, CA	1.275	1.262	1.213	1.174	1.243
7490	SANTA FE, NM	.	.	.	.	.
7500	SANTA ROSA-PETALUMA, CA	1.130	1.125	1.091	1.149	1.103
7510	SARASOTA, FL	0.897	0.889	0.930	1.033	0.956
7520	SAVANNAH, GA	0.866	0.868	0.931	0.910	0.903
7560	SCRANTON-WILKES BARRE, PA	0.873	0.884	0.864	0.912	0.904
7600	SEATTLE, WA	1.118	1.121	1.107	1.062	1.090
7610	SHARON,PA	0.934	0.941	0.932	0.965	0.927

MSA Code	Name	Basic GMEI	NORC Weights	Managerial & Professional Price Proxy	Pass-Through	Floor
7620	SHEBOYGAN, WI	0.911	0.914	0.947	0.913	0.904
7640	SHERMAN-DENISON, TX	0.911	0.912	0.908	0.875	0.888
7680	SHREVEPORT, LA	0.928	0.929	0.970	0.926	0.910
7720	SIOUX CITY, IA-NE	0.884	0.882	0.849	0.888	0.894
7760	SIOUX FALLS, SD	0.985	0.989	0.985	0.933	0.960
7800	SOUTH BEND-MISHAWAKA, IN	0.981	0.986	0.987	0.904	0.956
7840	SPOKANE, WA	0.944	0.945	0.939	0.977	0.932
7880	SPRINGFIELD, IL	0.974	0.978	1.042	1.001	0.950
7920	SPRINGFIELD, MO	0.824	0.829	0.910	0.880	0.890
8003	SPRINGFIELD,MA	0.945	0.940	0.925	1.013	0.947
8050	STATE COLLEGE,PA	0.999	0.997	1.024	1.003	0.975
8080	STEUBENVILLE-WEIRTON, OH-WV	0.856	0.855	0.882	0.974	0.931
8120	STOCKTON, CA	1.018	1.028	1.020	1.077	0.994
8160	SYRACUSE, NY	1.029	1.048	1.017	1.047	1.005
8200	TACOMA, WA	1.038	1.044	1.039	1.010	1.012
8240	TALLAHASSEE, FL	0.896	0.900	0.913	0.973	0.930
8280	TAMPA-ST. PETERSBURG-CLEAR, FL	0.951	0.955	0.925	0.993	0.939
8320	TERRE HAUTE, IN	0.769	0.769	0.765	0.838	0.872
8360	TEXARKANA, TX-TEXARKANA, AR	0.815	0.821	0.787	0.891	0.895
8400	TOLEDO, OH	0.944	0.951	0.988	0.939	0.921
8440	TOPEKA, KS	0.891	0.892	0.875	0.922	0.908
8480	TRENTON, NJ	1.100	1.090	1.096	1.097	1.073
8520	TUCSON, AZ	1.005	1.003	0.975	1.037	0.981
8560	TULSA, OK	0.922	0.915	0.996	0.933	0.913
8600	TUSCALOOSA, AL	0.958	0.963	0.998	0.907	0.934
8640	TYLER, TX	0.929	0.925	0.972	0.917	0.906
8680	UTICA-ROME, NY	1.002	1.022	0.961	0.999	0.978
8720	VALLEJO-FAIRFIELD-NAPA, CA	1.106	1.104	1.120	1.149	1.080
8725	VANCOUVER, WA	0.996	1.007	1.020	0.986	0.972
8750	VICTORIA, TX	0.851	0.831	0.894	0.925	0.909
8760	VINELAND-MILLVILLE-BRIDGETON, N	1.228	1.231	1.071	1.006	1.194
8780	VISALIA-TULARE-PORTERVILLE, CA	0.981	0.983	1.001	1.057	0.966
8800	WACO, TX	0.874	0.876	1.017	0.843	0.875
8840	WASHINGTON, D C -MD-VA	1.250	1.248	1.220	1.121	1.217
8920	WATERLOO-CEDAR FALLS, IA	0.866	0.866	0.891	0.990	0.937
8940	WAUSAU, WI	0.930	0.935	0.942	0.918	0.907
8960	WEST PALM BEACH-BOCA RATON-DELR	1.011	1.012	1.004	1.013	0.987
9000	WHEELING, WV-OH	0.801	0.798	0.849	0.871	0.887
9040	WICHITA, KS	0.993	0.998	0.991	0.997	0.969
9080	WICHITA FALLS, TX	0.900	0.900	0.913	0.886	0.893
9140	WILLIAMSPORT, PA	0.854	0.863	0.856	0.932	0.913
9160	WILMINGTON, DE-NJ-MD	1.173	1.176	1.157	0.992	1.142
9200	WILMINGTON, NC	0.926	0.928	0.845	0.870	0.902
9243	WORCESTER-FITCHBURG-LEOMINSTER,	0.910	0.903	0.962	0.995	0.939
9260	YAKIMA, WA	0.863	0.865	0.888	0.972	0.929
9280	YORK, PA	0.985	0.991	1.017	0.952	0.961
9320	YOUNGSTOWN-WARREN, OH	0.920	0.927	0.962	0.952	0.921
9340	YUBA CITY, CA	1.081	1.094	1.025	1.005	1.053
.	Alabama	0.809	0.821	0.814	0.834	0.871
.	Alaska	1.492	1.474	1.480	1.320	1.453
.	Arizona	0.925	0.936	0.906	0.966	0.927
.	Arkansas	0.747	0.750	0.771	0.789	0.852
.	California	0.996	1.001	0.982	1.036	0.973

MSA Code	Name	Basic GMEI	NORC Weights	Managerial & Professional Price Proxy	Pass-Through	Floor
.	Colorado	0.863	0.863	0.844	0.926	0.910
.	Connecticut	0.960	0.955	1.024	1.019	0.950
.	Delaware	0.826	0.823	0.905	0.867	0.885
.	Florida	0.824	0.838	0.838	0.879	0.890
.	Georgia	0.777	0.783	0.797	0.833	0.871
.	Hawaii	1.065	1.056	1.032	1.094	1.039
.	Idaho	0.852	0.853	0.876	0.899	0.899
.	Illinois	0.916	0.928	0.930	0.947	0.919
.	Indiana	0.825	0.829	0.867	0.853	0.879
.	Iowa	0.820	0.822	0.823	0.869	0.886
.	Kansas	0.787	0.794	0.802	0.870	0.886
.	Kentucky	0.842	0.850	0.875	0.854	0.879
.	Louisiana	0.816	0.827	0.846	0.848	0.877
.	Maine	0.756	0.755	0.766	0.912	0.904
.	Maryland	1.000	1.003	0.983	0.929	0.974
.	Massachusetts	0.945	0.943	0.935	0.994	0.939
.	Michigan	0.955	0.968	0.963	0.961	0.932
.	Minnesota	0.843	0.848	0.838	0.890	0.895
.	Mississippi	0.767	0.773	0.795	0.829	0.869
.	Missouri	0.760	0.766	0.805	0.833	0.870
.	Montana	0.888	0.890	0.871	0.896	0.897
.	Nebraska	0.759	0.761	0.778	0.822	0.865
.	Nevada	0.944	0.942	1.035	1.028	0.954
.	New Hampshire	0.826	0.816	0.835	0.919	0.907
.	New Mexico	0.869	0.875	0.859	0.878	0.890
.	New York	0.946	0.964	0.941	1.021	0.951
.	North Carolina	0.799	0.801	0.790	0.829	0.869
.	North Dakota	0.807	0.808	0.825	0.849	0.877
.	Ohio	0.831	0.835	0.850	0.888	0.894
.	Oklahama	0.800	0.807	0.800	0.830	0.869
.	Oregon	0.899	0.899	0.903	0.982	0.934
.	Pennsylvania	0.869	0.879	0.870	0.925	0.910
.	Rhode Island	.	.	.	.	0.870
.	South Carolina	0.756	0.761	0.797	0.831	0.872
.	South Dakota	0.742	0.744	0.745	0.837	0.861
.	Tennessee	0.851	0.855	0.804	0.810	0.865
.	Texas	0.771	0.773	0.793	0.822	0.907
.	Utah	0.884	0.882	0.866	0.919	0.889
.	Vermont	0.793	0.788	0.769	0.878	0.880
.	Virginia	0.848	0.850	0.838	0.856	0.966
.	Washington	0.990	0.994	0.961	0.955	0.878
.	West Virginia	0.843	0.846	0.847	0.850	0.889
.	Wisconsin	0.848	0.854	0.849	0.876	0.947
.	Wyoming	0.972	0.984	0.958	0.921	0.947

Note: State values shown are for rural areas.

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